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NSWC/DL TR-3569

COMPUTATION OF THE PERCENTAGE POINTS OF THE CHI-SQUARE DISTRIBUTION

by

A. R. DiDONATO

R. K. HAGEMAN

Warfare Analysis Department

APRIL 1977

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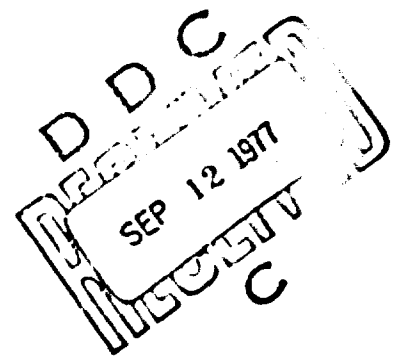
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A. R. DiDonato

R. K. Hageman



11-1473

FOREWORD

This technical report was written in the Applied Mathematics Section, Science and Mathematics Research Group, Warfare Analysis Department.

The authors are indebted to Dr. Marlin Thomas and members of his Statistical Analysis Branch for helping to choose the input values for the table of percentage points given in Appendix A.

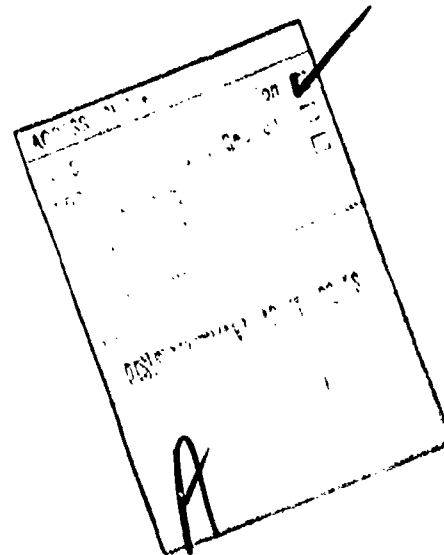
The work was completed on 20 August 1976.

Released by:

Ralph A. Niemann

RALPH A. NIEMANN

Head, Warfare Analysis Department



ABSTRACT

A Fortran IV program is developed for computing the percentage points of the Chi-square distribution. The Newton-Raphson procedure is used with good initial approximations. The maximum number of iterations is four and in most cases only one or two are needed. An extensive table is given of the percentage points χ^2 in terms of ν , a positive number, and $Q(\nu|\chi^2)$, the probability integral of the Chi-square distribution.

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1. INTRODUCTION

The primary objective of this paper is to describe the effective use of the Newton-Raphson procedure (N-R) for finding the percentage points of the Chi-square distribution. For a given value of $Q(\nu|\chi^2)$ and one of $\nu > 0$, the value of χ^2 is found, where

$$Q(\nu|\chi^2) = [2^{\nu/2}\Gamma(\nu/2)]^{-1} \int_{\chi^2}^{\infty} e^{-t/2} t^{\nu/2-1} dt, \quad \nu > 0 \quad (1)$$

$$0 \leq Q(\nu|\chi^2) \leq 1, \quad P(\nu|\chi^2) \equiv 1 - Q(\nu|\chi^2), \quad Q(\nu|0) = 1. \quad (2)$$

Here $\Gamma(\cdot)$ denotes the complete gamma function.

The final results of this study are a Fortran IV program which is listed in Appendix C, and an extensive table of percentage points with six correct significant digits. The program was used on the CDC 6700 to construct the table which contains 72,000 entries. The entire calculation took only 7.5 minutes with an average of $2(N-R)$ iterations per entry. The table is given in Appendix A. A very condensed version is also given in Appendix B primarily to exhibit a corrected copy of the table in [1, pp. 984-985]. The program was also employed to check a table of 5290 entries by Harter, [4, pp. 137-161]. No errors larger than one unit in the last place were found. They are listed in Section 5.

Because the notation is more convenient, we shall work with the incomplete gamma function ratios, $P(a, x)$ and $Q(a, x)$, [2] instead of the corresponding $P(\nu|\chi^2)$ and $Q(\nu|\chi^2)$, where

$$P(a, x) = \frac{1}{\Gamma(a)} \int_0^x e^{-t} t^{a-1} dt = P(\nu/2|\chi^2/2) \quad (3)$$

$$Q(a, x) = \frac{1}{\Gamma(a)} \int_x^{\infty} e^{-t} t^{a-1} dt = Q(\nu/2|\chi^2/2), \quad (4)$$

$$0 \leq \nu = 2a, \quad 0 \leq \chi^2 = 2x. \quad (5)$$

The relationships between (1), (2) and (3), (4) are well-known and easy to show using (5).

For easy reference, we note that the (N-R) refers to an iterative procedure for computing a root r of a function $f(t) \in C^1$. The $(n+1)$ st iterate is given by

$$t_{n+1} = t_n - f(t_n)/f'(t_n), \quad n = 0, 1, \dots \quad (6)$$

If convergence occurs so that

$$\lim_{n \rightarrow \infty} t_n = y, \quad f(y) = 0, \quad (7)$$

and moreover if $f'(y) \neq 0$, then

$$\lim_{n \rightarrow \infty} [t_{n+1} - y] = \frac{1}{2} [f''(y)/f'(y)] [t_n - y]^2, \quad [6, \text{pp. 329-330}]. \quad (8)$$

A glance at (8) shows that for t_{n+1} sufficiently close to y the error in t_{n+1} is approximately proportional to the square of the error in t_n . This is the attractive feature of the (N - R), and it applies in our case since $f' = dP/dx$, or dQ/dx , is always positive, or negative, respectively for $x > 0$, i.e., never zero.

In order to successfully use the (N - R) to find x from $P(a, x)$ or $Q(a, x)$, the following questions required affirmative answers:

- 1) Can $P(a, x)$ and $Q(a, x)$ be computed efficiently to high relative accuracy?
- 2) Can a "good" initial approximation to x , denoted hereafter by x_0 , always be found?
- 3) Will the (N - R) always converge for such x_0 ?

Treating the third question first, it is easy to show from (3) that for fixed $a \leq 1$, $P(a, x)$ is concave for all $x \geq 0$, and that for $a > 1$, $P(a, x)$ has an inflection point at $x = a - 1$ with P convex for $0 \leq x < a - 1$ and concave for $x > a - 1$. Similar properties hold for $Q(a, x)$. Typical curves are shown in Figure 1.

It can be shown analytically or from a geometric interpretation of the (N - R) that convergence will occur when $a \leq 1$ provided $x_0 \leq x$, and also when $a > 1$ if $x_0 = a - 1$. Thus global convergence can always be achieved without much difficulty.

Nevertheless, experimentation shows that if x_0 is chosen simply to assure convergence in the ways just described, the rate of convergence in most cases will be slow. Therefore for better efficiency, efforts were made to determine an x_0 "close" to x even though the sufficient conditions noted above might not be

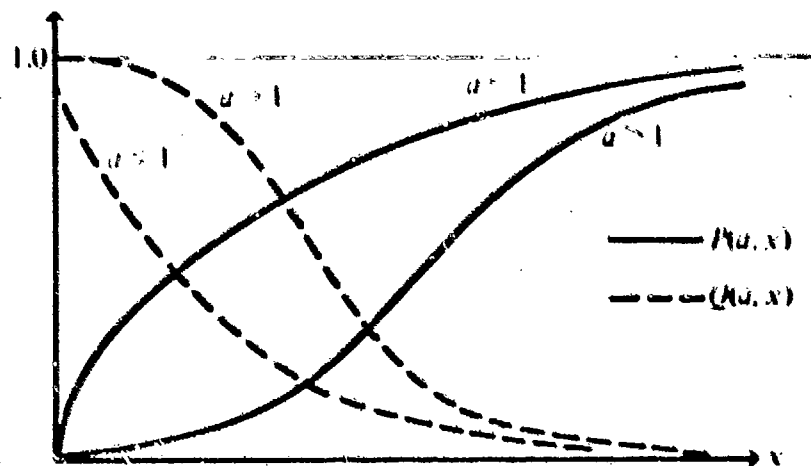


Figure 1. Typical curves of $P(a, x)$ and $Q(a, x)$ for fixed a .

satisfied. Convergence then would be established from computer results. This approach lead to a set of initial approximations depending on P , Q , and a , such that for $\epsilon < P < 1 - \epsilon$ ($\epsilon = 5 \times 10^{-13}$), no more than four iterations of the $(N - R)$ were needed to obtain x correctly to about 8 significant digits in every case tried including the 72,000 entries of the table in Appendix A.

For the $(N - R)$ to work so well not only are "good" starting values x_0 required, but also P , Q and their first derivatives must be available to high precision. This presented no problem because of a previous study of ours, [2], from which a computer program was developed giving P and Q to 12 significant digits for all $a > 0$, $x > 0$. The high precision requirements are necessary, of course, when x is desired to many digits. In addition, they are also needed when P is very close to zero or one otherwise the last term on the right hand side of (6) could carry no reliable digits with disastrous effects on the iterations.

Clearly then, the three questions posed above can be answered in the affirmative, and consequently a computer program based on the $(N - R)$ to find the percentage points of the chi-square distribution can be constructed.

In the next section we obtain the initial approximations for x . In Section 3, the criteria for terminating the $(N - R)$ are specified. In Section 4, the computer program is described, and a flow chart is given.

2. INITIAL APPROXIMATIONS

Our objective in this section is to give approximations for x which result in rapid convergence of the $(N - R)$ to a final estimate for x , say x^* . By rapid convergence we mean that no more than 4 iterations are necessary for about 8 correct significant digits in x^* .

We remark here that some of the analysis below is heuristic with the emphasis on plausibility, and attaining efficiency in the use of the $(N - R)$, at expense of rigor. The usefulness of the initial approximations is evaluated primarily by computer experimentation. No effort is made to obtain associated error bounds on $|x_0 - x|$, where x_0 denotes the initial approximation.

The input values of $P(a, x)$ and $Q(a, x)$ are denoted by P and Q , respectively. For the remainder of this section, as well as Sections 3 and 4, the flow chart on page 11 will be helpful.

Two sets of initial approximations for x are used depending on whether $a \leq 1$ or $a \geq 1$. (If $a = 1$, then $x = -\ln(Q)$.)

Considering $a \leq 1$ first, let

$$B = Q/a. \quad (9)$$

Then for $B \geq .45$, we have $x \leq 1$. For, if it is assumed that $x > 1$, then with $a \leq 1$

$$.45 \leq B = \int_1^x e^{-t} t^{a-1} dt \leq e^{-1},$$

This inequality implies $x < .7985$ contrary to the assumption $x > 1$. Thus with $x < 1$ an approximation for x_0 , say u , can be obtained from

$$P(a, x) = \frac{x^a}{\Gamma(a+1)} \left[1 - \frac{ax}{(a+1)!} + \frac{ax^2}{(a+2)2!} - \dots \right], \quad [1, \text{p. 262}] \quad (10)$$

by dropping all terms but the first, i.e.,

$$u = [P(a+1)]^{1/a}. \quad (11)$$

This result is improved by using the first two terms of (10) with (11). In this case

$$u \approx x_0 \left(1 - \frac{au}{a+1} \right)^{1/a} \approx x_0 \left(1 - \frac{u}{a+1} \right)$$

or

$$\boxed{x_0 \approx u/[1 - u/(a+1)]}, \quad B \geq .45, \quad a < 1. \quad (12)$$

We see that $1 - u/(a+1) > 0$. Indeed, from (10), $u < x$ for $x < 1$. Hence $u/(a+1) < x/a+1 < x$ and $1 - u/(a+1) > 1 - x > 0$.

If $B < .45$ (with $a < 1$), then an approximation for x_0 is found from the asymptotic series

$$Q(a, x) \approx [R(a, x)/x] \left[1 + \frac{a-1}{x} + \frac{(a-1)(a-2)}{x^2} + \dots \right], \quad (x \rightarrow \infty), \quad [1, \text{p. 263}], \quad (13)$$

where

$$R(a, x) = e^{-x} x^a / \Gamma(a). \quad (14)$$

We have by carrying only the first term on the right hand side of (13)

$$e^{x_0} x_0^{a-1} \approx Q(a) = B < .45, \quad (15)$$

and taking logarithms

$$-x + (a-1) \ln x \approx \ln B. \quad (16)$$

For $a < 1$, $x > 1$, the first term on the left dominates the second, giving as a first approximation to x_0

$$x \approx -\ln B. \quad (17)$$

This estimate for x_0 is then improved by using it in (16) to get

$$x = y + (a-1) \ln y. \quad (18)$$

We improve the result still further by using a rational approximation for Q , [5].

$$Q \approx [R(a, x)/v] \left(\frac{x+1}{x+2-a} \right), \quad (19)$$

and obtain

$$x \approx -\ln B + (a-1) \ln x - \ln [(x+2-a)/(x+1)] \quad (20)$$

Now using v , as given by (18), for x on the right hand side of (20), we have

$$x_0 \approx y + (1-a) \ln v - \ln [(v+2-a)/(v+1)] \quad B < .45, \quad 0 < a < 1. \quad (21)$$

We digress here briefly to show that the arguments of the logarithms in (21) are always positive for admissible values of a, x . Indeed, since $B < .45$,

$$v = -\ln B > -\ln .45 \equiv v_m \approx .7985, \quad (22)$$

so that for $v_m \leq v \leq 1$, we have from (18), with $a < 1$,

$$x \geq v \geq v_m \approx .7985.$$

For $y \geq 1$, we have from (18) that $dv/dy = 1 + (a-1)/v > 1 - 1/v > 0$, also $v = 1$ at $y = 1$. Therefore $v \geq .7985$ for all $B < .45, a < 1$. Also $x+2-a \geq .7985+2-a \geq 1.7985$.

It is possible when x is in the neighborhood of the computer determined value 0.62 that (12) is better than (21) as a choice for x_0 , even though $B < .45$, or that (21) is better than (12) when $B > .45$. Denoting x_0 from (12) by x_{01} and x_0 from (21) by x_{02} , it was concluded from computer experimentation that when $B > .45$ and $x_{01} > .57$, or $B < .45$ and $x_{02} < .67$ that usually the best choice for these situations was to take x_0 as the larger of x_{01} and x_{02} .

For $a > 1$, we consider the Cornish-Fisher six term approximation for v and denote it by \tilde{v}_6 . [3] A quantity x is determined first, where for a given Q

$$Q = \frac{1}{\sqrt{2\pi}} \int_0^x e^{-t^2/2} dt = q(x). \quad (23)$$

The value of x for a given value of $Q \in (0, 1/2]$ is obtained from the rational approximation

$$x \approx \psi = \frac{a_0 + a_1\psi + a_2\psi^2 + a_3\psi^3}{1 + b_1\psi + b_2\psi^2 + b_3\psi^3 + b_4\psi^4} \quad \psi = (-2 \ln Q)^{1/2}. \quad (24)$$

where the coefficients are determined by the Chebyshev minimax error criterion. They are given by

$$\begin{aligned} a_0 &= 3.3112 \cdot 59221 \cdot 08741 & b_1 &= 6.6105 \cdot 37656 \cdot 25462 \\ a_1 &= 11.661 \cdot 67202 \cdot 88968 & b_2 &= 6.4069 \cdot 15977 \cdot 60039 \\ a_2 &= 4.2834 \cdot 21589 \cdot 67104 & b_3 &= 1.2746 \cdot 44897 \cdot 82223 \\ a_3 &= .21362 \cdot 34937 \cdot 15853 & b_4 &= 3.6117 \cdot 08101 \cdot 88470(-1) \end{aligned} \quad (25)$$

Computer results indicate that the maximum relative error is no larger than 10^{-5} for $10^{-30} < Q < 5$. A similar expression is given in [1, p. 933] with that rational function containing one less term in both numerator and denominator. For values of $Q > 1.2$ ($P > 1.2$), x was found for $1 < Q$ and then replaced by $(x-y)$. Once x is computed, the Cornish-Fisher expansion [3] yields an approximation x_0 to x , namely

$$\begin{aligned} x_0 &= a + \sqrt{a} \left[\frac{1}{6} \sqrt{a} + (s^2 - 1) \left(\frac{1}{3} + s(s^2 - 7) \right) \frac{1}{36 \sqrt{a}} \right. \\ &\quad \left. + \left[(6s^4 + 14s^2 - 32) \frac{1}{1620 a} + s(9s^3 + 256s^2 + 433) \frac{1}{38880 a^{3/2}} \right] \right] \end{aligned} \quad (26)$$

We remark here that an improved version of the Wilson-Hilferty approximation for x , [7] in terms of s and a also, was not as good as (26). For completeness, we give that approximation

$$x_0 \approx a[1 + 1/9a + (s-h)\sqrt{3a}]^{-3} \quad (27)$$

$$h = [3(s^2 - 3) - 8(s^2 - 1)\sqrt{3a}] / 108a \quad (28)$$

The quantity x_0 given by (26) improves as an estimate for x as a increases. Experimentation shows, when $P > 1.2$, that if $a > 19$ or if $\hat{x}_0 > 0.116z + 1$, that x_0 is acceptable as x_0 . However, if $a < 19$ and $\hat{x}_0 < 0.116z + 1$, with $P > 1.2$, then another choice for x_0 is considered. In particular, from (10)

$$a = [P(1a + 1)]^{1/2} = x \left(1 + \frac{x}{a + 1} \right) \quad (29)$$

or, replacing x with x_0

$$\frac{1}{a + 1} x_0^2 - x_0 + 1 = 0 \quad (30)$$

The quadratic has solution

$$x_0 = \frac{1}{2} \left[1 \pm \sqrt{1 - 4(a + 1)} \right] \quad (31)$$

Indicating the solution with the minus sign by x_0^- or x_{0-} , we have

$$x_0^- = \frac{1}{2} \left[1 - \sqrt{1 - 4(a + 1)} \right] \quad (32)$$

The root in (31) with the plus sign, $x(+)$ should not be used, because it does not yield a good approximation to x when $x/(a+1)$ is small. Indeed, the approximation for u given in (29) is only good if $x/a+1$ is small. Therefore, we have from (29) $\tilde{x} \cong u$. In addition, we also conclude from (30) that in fact $u < \tilde{x}$, so that

$$u/(a+1) < \tilde{x}/(a+1) \ll 1. \quad (33)$$

Then expanding the radical of (31) gives the desired result, $\tilde{x} \cong u$ from $x(-)$ but not from $x(+)$ which precludes the use of $x(+)$.

The choice between \tilde{x}_0 and \bar{x}_0 ($x(-)$) was made by experimentation. The conclusions were: If $P \leq 1/2$, $a \leq 19$, $\tilde{x}_0 \leq 0.11(a+1)$ and $a > 4$, or instead of $a > 4$, $a \leq 4$ and $P \leq n_j$, where j equals that $i = 1, 2, 3, 4$ for which $|a - i|$ is a minimum and $n_1 = .15$, $n_2 = .05$, $n_3 = .01$, $n_4 = .001$, then \bar{x}_0 from (32) is taken as x_0 . On the other hand \tilde{x}_0 of (26) is taken as x_0 under the conditions specified earlier, or when $P \leq 1/2$, $a \leq 19$, $\tilde{x}_0 \leq 0.11(a+1)$, $a \leq 4$ and $\bar{P} > n_j$.

When $\bar{P} > 1/2$ and $a \geq 11$, then again \tilde{x}_0 is a satisfactory choice for x_0 . If however $\bar{P} > 1/2$ and $1 < a < 11$, then experimentation shows a better estimate than \tilde{x}_0 is obtained from

$$x_0 = v - (1-a) \ln \tilde{x}_0 - \ln [(\tilde{x}_0 + 2 - a)/(\tilde{x}_0 + 1)] \quad (34)$$

provided that in addition we also have

$$\tilde{x}_0 > 4a. \quad (35)$$

Equation (34) is obtained in much the same way as (21) so its derivation is not given.

3. CRITERIA FOR TERMINATING $(N-R)$

In this section we discuss the ways in which the $(N-R)$ is terminated. Since we are interested in getting x correct to about 8 significant digits we required

$$|x_N - x_{N-1}| < \lambda x_N, \quad \lambda = 5 \times 10^{-5}, \quad (36)$$

where x_N denotes the N^{th} iterate of $(N-R)$. If the inequality holds, then x_N and x_{N-1} agree to at least 4 significant digits. However, this means x_N has close to 8, since by (8)

$$|x_N - x|/x \cong K |x_{N-1} - x|^2/x^2, \quad K < \frac{1}{2} |a - 1 - x|. \quad (37)$$

which implies the relative error in x_N is proportional to the square of the relative error in x_{N-1} . The proportionality factor K can be large when a and P are large, for example, $K \cong 3525$ when $a \cong 10^6$, $Q \cong 10^{-12}$, but it is also true for large a that x_0 is very close to x . In fact, for the example above x_0 , from (26), already gives x to 11 significant digits. Computer results support our conclusion drawn from (37).

Although the primary goal is to insure the accuracy of x^* to about 8 significant digits (it is recalled x^* is the final iterate from $(N-R)$). See page 3. A secondary objective is to satisfy (40) or (41) below. In this connection, we required once (36) was satisfied, that

$$|x_N - x_{N-1}|^2 |a - x_N - 1| (a + 1 - x_N) \leq 2 \left(\frac{a+1}{a} \right) \lambda x_N^2 \quad \text{if } a > x_N - 1 \quad (38)$$

or

$$|x_N - x_{N-1}|^2 (x_N + 1 - a)(x_N + 2 - a) \leq 2 \lambda x_N (x_N + 1), \quad \text{if } a \leq x_N - 1. \quad (39)$$

If (36) is satisfied but the appropriate inequality, (38) or (39), is not, then one more iteration of $(N-R)$ is carried out before stopping the procedure. We note in this case $x^* = x_{N+1}$. At $\lambda = 5 \times 10^{-5}$ no cases were found where the designated inequality, (38) or (39), was not satisfied, however for smaller values of λ , for example 6×10^{-7} some cases did occur and one more iteration was made.

Inequalities (38) and (39) are employed to test whether

$$|P(a, x_N) - P| \leq \lambda P, \quad \text{if } P \leq 1/2, \quad (40)$$

or

$$|Q(a, x_N) - Q| \leq \lambda Q, \quad \text{if } Q < 1/2, \text{ respectively.} \quad (41)$$

Ideally, we would like that (38) always implies (40) and (39) always implies (41). This will not always be the case because of the approximations that are used to get (38) and (39). In general however computer results indicate that (38) and (39) work quite well in establishing (40) and (41).

We derived (38) in the following way. Let P_n denote $P(a, x_n)$. Taking two terms of the Taylor series expansion of P about x_N , we have

$$(P - P_N) P_N \approx (x - x_N) P'_N / P_N. \quad (42)$$

Using the expressions

$$P(a, x) = [R(a, x)/a] A(a, x), \quad P'(a, x) = R(a, x)/x, \quad (43)$$

where

$$A(a, x) = 1 + \sum_{k=1}^{\infty} \frac{x^k}{(a+1)^{k+1} (a+k)}, \quad [1, p. 262]$$

$$P'_N / P_N = [R(a, x_N)/x_N] / [R(a, x_N)/a] A(a, x_N) \quad (44)$$

$$\leq \frac{a}{x_N} \left[1 + \frac{1}{x_N(a+1)} \right] \approx \frac{a}{x_N} \left(1 + \frac{x_N}{a+1} \right) = \frac{a}{a+1} (a+1-x_N) x_N$$

Using this result in (42)

$$(P - P_N)/P_N \cong (P'_N/P_N)(x - x_N) \cong \frac{a}{a+1} (a+1 - x_N)(x - x_N)/x_N, \quad (x_N < a+1). \quad (45)$$

Now using an approximation to (37) in (45), namely

$$\begin{aligned} |x - x_N|/x_N &\cong K|x - x_{N-1}|^2/x_N \\ &\cong \frac{1}{2} |a - 1 - x_N||x_N - x_{N-1}|^2/x_N^2, \end{aligned} \quad (46)$$

we have

$$|P - P_N|/P_N \cong \frac{1}{2} \frac{a}{a+1} (a+1 - x_N)|a - 1 - x_N||x_N - x_{N-1}|^2/x_N^2, \quad x_N < a+1. \quad (47)$$

Constraining the right hand side to be no greater than λ yields (38).

Inequality (39) is obtained in much the same way. Again

$$(\bar{Q} - Q_N)/Q_N \cong (Q'_N/Q_N)(x - x_N). \quad (48)$$

Approximating Q_N by (19), and differentiating (4), we obtain

$$|Q'_N/Q_N| \cong (x_N + 2 - a)/(x_N + 1), \quad x_N > a - 2, \quad (49)$$

which when used in (48) gives

$$|\bar{Q} - Q_N|/Q_N \cong (x_N + 2 - a)/(x_N + 1)|x - x_N|. \quad (50)$$

Thus approximating (37) as above by (46) and using the result in (50) gives

$$\frac{|\bar{Q} - Q_N|}{Q_N} \cong \frac{1}{2} (x_N + 2 - a)|x_N + 1 - a||x_N - x_{N-1}|^2/x_N(x_N + 1), \quad x_N > a - 2. \quad (51)$$

Constraining the right hand side to be no greater than λ gives (39). Since the approximation for Q , given by (19), improves with increasing x , we used (39) for $x_N \geq a+1$ rather than $x_N > a-2$.

4. COMPUTER PROGRAM

The flow chart at the end of this section on page 11 shows in some detail the basic organization and flow of the program. The boxes marked (A) and (B) refer to particular forms of the $(X-R)$ which are used. Thus (A) refers to the algorithm

$$x_{n+1} = x_n [1 - (P(a, x_n) - P)R(a, x_n)], \quad n = 0, 1, \dots, \quad (52)$$

and (B) refers to

$$x_{n+1} = x_n [1 + (Q(a, x_n) - Q)/R(a, x_n)], \quad n = 0, 1, \dots, \quad (53)$$

where it is recalled P, Q, a are given and $R(a, x)$ is defined by (14). For $\bar{P} \leq 1/2$, (52) is used and when $\bar{P} > 1/2$ (53) applies. By a single call to the incomplete gamma function ratio routine (PAX 6), [2], the quantities $P(a, x_n)$, $Q(a, x_n)$ and $R(a, x_n)$ are computed to an accuracy of one unit in the twelfth significant digit. (There is an option of obtaining 6 or 3 significant digits, instead of 12, if desired.) If $a < 100$, $R(a, x_n)$ is always available from (PAX 6). In order to obtain $R(a, x_n)$ when $a \geq 100$ and $3a \leq 4x \leq 5a$ however, an appropriate modification of the original version of PAX 6) was made.

The conditions under which $(N - R)$ is terminated were discussed in the previous section. Essentially, the iterations continue until

$$|x_N - x_{N-1}| \leq \lambda x_N. \quad (54)$$

Then for $x_N < a + 1$, (38) is checked, or if $x_N \geq a + 1$ then (39) is checked. Denoting the final output value for x by x^* , if the applicable inequality, (38) or (39), is satisfied then $x^* = x_N$, if it is not satisfied then one more $(N - R)$ iteration is carried out and $x^* = x_{N+1}$.

The program is presently set with $\lambda = 5 \times 10^{-5}$. By arguments given previously this insures close to 8 correct significant digits for the output value x^* . In the case of the table in Appendix A, λ was set to 5×10^{-6} .

A reflection of the very good initial approximations (x_0) for x is the fact that no case was found where more than 4 iterations was required, including the 72,000 entries of the table in Appendix A. The methods by which x_0 is obtained were discussed in Section 2.

An estimate of the average computing time per case for the CDC 6700, with $\lambda = 5 \times 10^{-5}$, is about 4 milliseconds.

A feature of the program permits the user to specify a starting value, \bar{x}_0 , of his own. Thus if the user desires more significant figures in x^* , he need only make an additional call to the program specifying \bar{x}_0 as the last value of x^* obtained. Or, it maybe that the user can, in special circumstances, actually supply better starting values than those given by the program.

As a result of this option for the user, the possibility of a poor choice for x_0 arises. For example $\bar{x}_0 < 0$ or \bar{x}_0 such that $x_n < 0$, or \bar{x}_0 such that many iterations of $(N - R)$ are needed. With this in mind, an additional output location, call it Y , is allotted to inform the user of errors in input or poor choices for x_0 . In particular

If $n \in Y$, n , a positive integer, indicates the number of iterations by $(N - R)$.

If $n = 0$, then either $a \geq 1$ or $a < 1$, $B \geq .45$, (see (9)), and $ax_0/(a + 1) \leq 10^{-14}$, or $P = 1$, $Q = 0$, or $P = 0$, $Q = 1$. In every case an acceptable value for x is given.

If $n = 2 \in Y$, $a \leq 0$ has been specified. No x^* is found.

If $n = 4 \in Y$, $|P + Q - 1| \geq 5 \times 10^{-13}$, i.e., P and $Q = 1 - P$ are not compatible. No x^* is found.

If $n = 5 \in Y$, x_0 specified by the user is negative. No x^* is found.

[illegible]

100	74	10	100
50	72	15	50

If $-6 \in Y$, 20 iterations of $(N - R)$ have occurred. A poor choice of \bar{x}_0 by the user is indicated. x^* is given but it may not be very accurate.

If $-7 \in Y$, x_n from $(N - R)$, using (52) or (53) is negative no value for x^* is given.

It is the user's responsibility to check location Y .

The program has been validated for values of λ ranging from 10^{-6} to 10^6 with $P \in [\epsilon, 1 - \epsilon]$, ($\epsilon = 5 \times 10^{-13}$). The program experienced no difficulty. Also Harter's table of percentage points [4] were used as a check. A list of the errors found in his table is given in the next section.

Finally, we remark that it is possible to speed up the program by requiring fewer correct significant digits in x^* . For example for $\lambda = 5 \times 10^{-2}$, the average computing time is reduced from 4 to 2 milliseconds with x^* good to 3 or 4 significant digits. A further decrease in computing time for $\lambda = 5 \times 10^{-2}$ can be achieved by requiring less accuracy in the computation of P, Q , say 6 significant digits instead of 12. This is accomplished by setting a parameter in the PAX6 subroutine, (see [2]). Under these circumstances the average computing time per case would be about 1.5 milliseconds.

5. ERRORS IN HARTER'S TABLE

Harter's table is a tabulation with 5290 entries of χ^2 in terms of ν and $P(\nu|\chi^2)$. It is contained in [4, pp. 137-161]. The input values of ν and $P(\nu|\chi^2)$ that he used also make up part of the input for the much larger table in Appendix A of this report.

A careful check of Harter's results shows that 139 of his values for χ^2 are in error by one unit in the 6th significant digit which is also the last recorded digit. Certainly such errors detract very little from his table. We list the necessary corrections below. The page number in [4] is given first as a heading. The first, fourth, and seventh columns refer to values of ν , the second, fifth, and eighth columns refer to values of $P(\nu, \chi^2)$, and the third, sixth and ninth columns to the associated error. If a plus one (+1) occurs in the error column (denoted by E) this means a one should be added in the last place of Harter's tabulated result for χ^2 ; in case a minus one (-1) occurs a one should be subtracted. For example, the listing below indicates an error on page 161, $\nu = 322$, $P(\nu|\chi^2) = .9500$. It is shown in the error column as a (-1). Therefore Harter's result of $\chi^2 = 364.848$ should be changed to $\chi^2 = 364.847$.

Corrections To Harter's Table

ν	$P(\nu|\chi^2)$	E	ν	$P(\nu|\chi^2)$	E	ν	$P(\nu|\chi^2)$	E
-------	-----------------	-----	-------	-----------------	-----	-------	-----------------	-----

Page 138

1	.2000	+1	5	.0005	+1	8	.4000	+1
4	.0250	+1	7	.4000	-1	9	.9950	+1

Page 139

11	.0001	+1	16	.3000	-1	18	.2000	+1
11	.9750	-1	16	.9750	+1	19	.5000	+1
12	.0001	+1	17	.9999	+1	20	.9995	+1
13	.9999	+1	18	.0001	+1			
14	.0100	+1	18	.0500	+1			

Page 140

22	.9950	+1	27	.9900	-1	29	.2000	+1
23	.0005	+1	28	.4000	+1	30	.9990	+1

Page 141

32	.9000	-1	36	.9990	+1	38	.6000	-1
33	.9950	-1	38	.1000	+1	39	.7000	-1
34	.8000	-1	38	.5000	+1	40	.9990	+1

Page 142

42	.9750	+1	44	.9750	+1	47	.9750	-1
43	.1000	+1	44	.9950	+1	49	.9500	-1
44	.2000	-1	45	.9999	+1	50	.9999	-1

Page 143

51	.9990	+1	55	.9950	+1	57	.9950	+1
52	.9500	+1	56	.9750	+1	58	.9950	+1
52	.9750	+1	56	.9950	+1	60	.9990	-1
52	.9990	+1	57	.1000	-1			
53	.9950	+1	57	.9500	-1			

Page 144

61	.2000	-1	64	.9900	+1	68	.1000	+1
62	.9950	+1	65	.9950	-1	68	.2000	-1
64	.9000	-1	66	.2000	-1	70	.8000	-1
64	.9750	+1	67	.8000	-1			

Page 145

71	.1000	+1	74	.9000	-1	76	.3000	+1
72	.9000	-1	74	.9750	-1	76	.9900	+1
73	.9750	+1	76	.1000	+1	80	.8000	-1

Page 146

81	.9990	+1	82	.0050	+1	83	.8000	-1
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Page 147

93	.0250	-1	94	.1000	-1	97	.5000	+1
94	.0001	+1	95	.0010	+1	99	.1000	+1

Corrections To Harter's Table Continued

ν	$P(\nu \chi^2)$	E	ν	$P(\nu \chi^2)$	E	ν	$P(\nu \chi^2)$	E
-------	-----------------	-----	-------	-----------------	-----	-------	-----------------	-----

Page 148

102	.9750	+1	109	.1000	+1			
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Page 149

112	.1000	+1	112	.6000	+1	119	.0001	+1
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Page 150

122	.0010	+1	124	.0500	-1			
122	.9950	+1	129	.9500	+1			

Page 151

131	.9995	+1	132	.0100	+1	135	.1000	+1
-----	-------	----	-----	-------	----	-----	-------	----

Page 152

145	.9990	+1						
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Page 154

174	.0100	+1	184	.0500	-1	188	.9750	+1
174	.3000	+1	184	.1000	-1			

Page 155

192	.2000	-1	196	.0500	+1	200	.0500	+1
192	.9900	+1	196	.9750	+1	208	.0000	+1

Page 156

212	.9950	+1	220	.1000	-1	226	.6000	+1
216	.0500	+1	224	.0500	+1	230	.1000	+1

Page 157

236	.9000	-1	244	.9990	+1			
238	.9995	+1	250	.3000	+1			

Page 158

262	.4000	+1	258	.1000	+1	270	.9995	+1
264	.0005	+1	262	.9950	+1			

Page 159

274	.9750	+1	280	.9750	+1			
276	.9500	+1	280	.9900	+1			

Page 160

300	.9900	-1	304	.9990	+1	306	.9750	-1
302	.0250	-1	306	.0001	+1			

Page 161

312	.0500	+1	318	.9750	+1	322	.9990	+1
314	.9750	+1	322	.9500	-1	328	.0500	-1

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APPENDIX A
TABLE A
PERCENTAGE POINTS OF THE CHI-SQUARE DISTRIBUTION

PERCENTAGE POINTS OF $Q(\nu|\chi^2)$ -- TABLE A

This appendix contains a table of χ^2 as a function of ν and $Q(\nu|\chi^2)$. It is a much larger table than the ones contained in [1, pp. 984-985], [4, pp. 137-161]. There are 72,000 values of χ^2 tabulated to six correct significant digits with 1200 values of ν and 60 values of $Q(\nu|\chi^2)$ taking the following values:

ν : 0.1(0.1)1.3(0.2)2.6(0.25)4.2.5(0.5)512

Q : 0.999999, 0.999995, 0.99999, 0.99995, 0.9999, 0.9995, 0.999, 0.9975, 0.995, 0.9925, 0.99, 0.9875, 0.985, 0.98 (0.005) 0.95, 0.925, 0.9 (0.05) 0.5, 0.475, 0.45 (0.05) 0.10, 0.075, 0.05 (0.005) 0.015, 0.0125 (0.0025) 0.0025, 0.001, 0.0005, 0.0001, 0.00005, 0.00001, 0.000005, 0.000001.

The values of χ^2 are expressed in normalized form. For example for $Q = .9975$ and $\nu = 1.9$, we have $\chi^2 = .357377 - 02 = .357377 \times 10^{-2}$ or for $Q = .9925$, $\nu = 9.9$ we have $\chi^2 = .233478 - 01 = .233478 \times 10^{-1}$.

An extremely condensed version of this table is given in Appendix B starting on page 164.

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and v

[illegible]

and the other two are

1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397</
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[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.99999	.99995	.99990	.99950	.99900	.99750	.99500	.99250
17.0	.175512	.215118	.236748	.293944	.323515	.407087	.451274	.508976
17.1	.175517	.215123	.236753	.293949	.323520	.407092	.451279	.508981
17.2	.175522	.215128	.236758	.293954	.323525	.407097	.451284	.508986
17.3	.175527	.215133	.236763	.293959	.323530	.407102	.451289	.508991
17.4	.175532	.215138	.236768	.293964	.323535	.407107	.451294	.508996
17.5	.175537	.215143	.236773	.293969	.323540	.407112	.451299	.509001
17.6	.175542	.215148	.236778	.293974	.323545	.407117	.451304	.509006
17.7	.175547	.215153	.236783	.293979	.323550	.407122	.451309	.509011
17.8	.175552	.215158	.236788	.293984	.323555	.407127	.451314	.509016
17.9	.175557	.215163	.236793	.293989	.323560	.407132	.451319	.509021
18.0	.175562	.215168	.236798	.293994	.323565	.407137	.451324	.509026
18.1	.175567	.215173	.236803	.294000	.323570	.407142	.451329	.509031
18.2	.175572	.215178	.236808	.294005	.323575	.407147	.451334	.509036
18.3	.175577	.215183	.236813	.294010	.323580	.407152	.451339	.509041
18.4	.175582	.215188	.236818	.294015	.323585	.407157	.451344	.509046
18.5	.175587	.215193	.236823	.294020	.323590	.407162	.451349	.509051
18.6	.175592	.215198	.236828	.294025	.323595	.407167	.451354	.509056
18.7	.175597	.215203	.236833	.294030	.323600	.407172	.451359	.509061
18.8	.175602	.215208	.236838	.294035	.323605	.407177	.451364	.509066
18.9	.175607	.215213	.236843	.294040	.323610	.407182	.451369	.509071
19.0	.175612	.215218	.236848	.294045	.323615	.407187	.451374	.509076
19.1	.175617	.215223	.236853	.294050	.323620	.407192	.451379	.509081
19.2	.175622	.215228	.236858	.294055	.323625	.407197	.451384	.509086
19.3	.175627	.215233	.236863	.294060	.323630	.407202	.451389	.509091
19.4	.175632	.215238	.236868	.294065	.323635	.407207	.451394	.509096
19.5	.175637	.215243	.236873	.294070	.323640	.407212	.451399	.509101
19.6	.175642	.215248	.236878	.294075	.323645	.407217	.451404	.509106
19.7	.175647	.215253	.236883	.294080	.323650	.407222	.451409	.509111
19.8	.175652	.215258	.236888	.294085	.323655	.407227	.451414	.509116
19.9	.175657	.215263	.236893	.294090	.323660	.407232	.451419	.509121
20.0	.175662	.215268	.236898	.294095	.323665	.407237	.451424	.509126
20.1	.175667	.215273	.236903	.294100	.323670	.407242	.451429	.509131
20.2	.175672	.215278	.236908	.294105	.323675	.407247	.451434	.509136
20.3	.175677	.215283	.236913	.294110	.323680	.407252	.451439	.509141
20.4	.175682	.215288	.236918	.294115	.323685	.407257	.451444	.509146
20.5	.175687	.215293	.236923	.294120	.323690	.407262	.451449	.509151
20.6	.175692	.215298	.236928	.294125	.323695	.407267	.451454	.509156
20.7	.175697	.215303	.236933	.294130	.323700	.407272	.451459	.509161
20.8	.175702	.215308	.236938	.294135	.323705	.407277	.451464	.509166
20.9	.175707	.215313	.236943	.294140	.323710	.407282	.451469	.509171
21.0	.175712	.215318	.236948	.294145	.323715	.407287	.451474	.509176
21.1	.175717	.215323	.236953	.294150	.323720	.407292	.451479	.509181
21.2	.175722	.215328	.236958	.294155	.323725	.407297	.451484	.509186
21.3	.175727	.215333	.236963	.294160	.323730	.407302	.451489	.509191
21.4	.175732	.215338	.236968	.294165	.323735	.407307	.451494	.509196
21.5	.175737	.215343	.236973	.294170	.323740	.407312	.451499	.509201
21.6	.175742	.215348	.236978	.294175	.323745	.407317	.451504	.509206
21.7	.175747	.215353	.236983	.294180	.323750	.407322	.451509	.509211
21.8	.175752	.215358	.236988	.294185	.323755	.407327	.451514	.509216
21.9	.175757	.215363	.236993	.294190	.323760	.407332	.451519	.509221
22.0	.175762	.215368	.236998	.294195	.323765	.407337	.451524	.509226
22.1	.175767	.215373	.237003	.294200	.323770	.407342	.451529	.509231
22.2	.175772	.215378	.237008	.294205	.323775	.407347	.451534	.509236
22.3	.175777	.215383	.237013	.294210	.323780	.407352	.451539	.509241
22.4	.175782	.215388	.237018	.294215	.323785	.407357	.451544	.509246
22.5	.175787	.215393	.237023	.294220	.323790	.407362	.451549	.509251
22.6	.175792	.215398	.237028	.294225	.323795	.407367	.451554	.509256
22.7	.175797	.215403	.237033	.294230	.323800	.407372	.451559	.509261
22.8	.175802	.215408	.237038	.294235	.323805	.407377	.451564	.509266
22.9	.175807	.215413	.237043	.294240	.323810	.407382	.451569	.509271
23.0	.175812	.215418	.237048	.294245	.323815	.407387	.451574	.509276
23.1	.175817	.215423	.237053	.294250	.323820	.407392	.451579	.509281
23.2	.175822	.215428	.237058	.294255	.323825	.407397	.451584	.509286
23.3	.175827	.215433	.237063	.294260	.323830	.407402	.451589	.509291
23.4	.175832	.215438	.237068	.294265	.323835	.407407	.451594	.509296
23.5	.175837	.215443	.237073	.294270	.323840	.407412	.451599	.509301
23.6	.175842	.215448	.237078	.294275	.323845	.407417	.451604	.509306
23.7	.175847	.215453	.237083	.294280	.323850	.407422	.451609	.509311
23.8	.175852	.215458	.237088	.294285	.323855	.407427	.451614	.509316
23.9	.175857	.215463	.237093	.294290	.323860	.407432	.451619	.509321
24.0	.175862	.215468	.237098	.294295	.323865	.407437	.451624	.509326
24.1	.175867	.215473	.237103	.294300	.323870	.407442	.451629	.509331
24.2	.175872	.215478	.237108	.294305	.323875	.407447	.451634	.509336
24.3	.175877	.215483	.237113	.294310	.323880	.407452	.451639	.509341
24.4	.175882	.215488	.237118	.294315	.323885	.407457	.451644	.509346
24.5	.175887	.215493	.237123	.294320	.323890	.407462	.451649	.509351
24.6	.175892	.215498	.237128	.294325	.323895	.407467	.451654	.509356
24.7	.175897	.215503	.237133	.294330	.323900	.407472	.451659	.509361
24.8	.175902	.215508	.237138	.294335	.323905	.407477	.451664	.509366
24.9	.175907	.215513	.237143	.294340	.323910	.407482	.451669	.509371
25.0	.175912	.215518	.237148	.294345	.323915	.407487	.451674	.509376
25.1	.175917	.215523	.237153	.294350	.323920	.407492	.451679	.509381
25.2	.175922	.215528	.237158	.294355	.323925	.407497	.451684	.509386
25.3	.175927	.215533	.237163	.294360	.323930	.407502	.451689	.509391
25.4	.175932	.215538	.237168	.294365	.323935	.407507	.451694	.509396
25.5	.175937	.215543	.237173	.294370	.323940	.407512	.451699	.509401
25.6	.175942	.215548	.237178	.294375	.323945	.407517	.451704	.509406
25.7	.175947	.215553	.237183	.294380	.323950	.407522	.451709	.509411
25.8	.175952	.215558	.237188	.294385	.323955	.407527	.451714	.509416
25.9	.175957	.215563	.237193	.294390	.323960	.407532	.451719	.509421
26.0	.175962	.215568	.237198	.294395	.323965	.407537	.451724	.509426
26.1	.175967	.215573	.237203	.294400	.323970	.407542	.451729	.509431
26.2	.175972	.215578	.237208	.294405	.323975	.407547	.451734	.509436
26.3	.175977	.215583	.237213	.294410	.323980	.407552	.451739	.509441
26.4	.175982	.215588	.237218	.294415	.323985	.407557	.451744	.509446
26.5	.175987	.215593	.237223	.294420	.323990	.407562	.451749	.509451
26.6	.175992	.215598	.237228	.294425	.323995	.407567	.451754	.509456
26.7	.175997	.215603	.237233	.294430	.324000	.407572	.451759	.509461
26.8	.176002	.215608	.237238	.294435	.324005	.407577	.451764	.509466
26.9	.176007	.215613	.237243	.294440	.324010	.407582	.451769	.509471
27.0	.176012	.215618	.237248	.294445	.324015	.407587	.451774	.509476
27.1	.176017	.215623	.237253	.294450	.324020	.407592	.451779	.509481
27.2	.176022	.215628	.237258	.294455	.324025	.407597	.451784	.509486
27.3	.176027	.215633	.237263	.294460	.324030	.407602	.451789	.509491
27.4	.176032	.215638	.237268	.294465	.324035	.407607	.451794	.509496
27.5	.176037	.215643	.237273	.294470	.324040	.407612	.451799	.509501
27.6	.176042	.215648	.237278	.294475	.324045	.407617	.451804	.509506
27.7	.176047	.215653	.237283	.294480	.324050	.407622	.451809	.509511
27.8	.176052	.215658	.237288	.294485	.324055	.407627	.451814	.509516
27.9	.176057	.215663	.237293	.294490	.324060	.407632	.451819	.509521
28.0	.176062	.215668	.237298	.294495	.324065	.407637	.451824	.509526
28.1	.176067	.215673	.237303	.294500	.324070	.407642	.451829	.509531
28.2	.176072	.215678	.237308	.294505	.324075	.407647	.451834	.509536
28.3	.176077	.215683	.237313	.294510	.324080	.407652	.451839	.509541
28.4	.176082	.215688	.237318	.294515	.324085	.407657	.451844	.509546
28.5	.176087	.215693	.237323	.294520	.324090	.407662	.451849	.509551
28.6	.176092	.215698	.237328	.294525	.324095	.407667	.451854	.509556
28.7	.176097	.215703	.237333	.294530	.324100	.407672	.451859	.509561
28.8	.176102	.215708	.237338	.294535	.324105	.407677	.451864	.509566
28.9	.176107	.215713	.2373					

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and r

67.5	224895	267782	257041	287443	231545	321013	335832	356584	374531	399250	421355	445306	461037	478012	495025	512012	529012	546012	563012	580012	597012	614012	631012	648012	665012	682012	699012	716012	733012	750012	767012	784012	801012	818012	835012	852012	869012	886012	903012	920012	937012	954012	971012	988012	1005012	1022012	1039012	1056012	1073012	1090012	1107012	1124012	1141012	1158012	1175012	1192012	1209012	1226012	1243012	1260012	1277012	1294012	1311012	1328012	1345012	1362012	1379012	1396012	1413012	1430012	1447012	1464012	1481012	1498012	1515012	1532012	1549012	1566012	1583012	1600012	1617012	1634012	1651012	1668012	1685012	1702012	1719012	1736012	1753012	1770012	1787012	1804012	1821012	1838012	1855012	1872012	1889012	1906012	1923012	1940012	1957012	1974012	1991012	2008012	2025012	2042012	2059012	2076012	2093012	2110012	2127012	2144012	2161012	2178012	2195012	2212012	2229012	2246012	2263012	2280012	2297012	2314012	2331012	2348012	2365012	2382012	2399012	2416012	2433012	2450012	2467012	2484012	2501012	2518012	2535012	2552012	2569012	2586012	2603012	2620012	2637012	2654012	2671012	2688012	2705012	2722012	2739012	2756012	2773012	2790012	2807012	2824012	2841012	2858012	2875012	2892012	2909012	2926012	2943012	2960012	2977012	2994012	3011012	3028012	3045012	3062012	3079012	3096012	3113012	3130012	3147012	3164012	3181012	3198012	3215012	3232012	3249012	3266012	3283012	3300012	3317012	3334012	3351012	3368012	3385012	3402012	3419012	3436012	3453012	3470012	3487012	3504012	3521012	3538012	3555012	3572012	3589012	3606012	3623012	3640012	3657012	3674012	3691012	3708012	3725012	3742012	3759012	3776012	3793012	3810012	3827012	3844012	3861012	3878012	3895012	3912012	3929012	3946012	3963012	3980012	3997012	4014012	4031012	4048012	4065012	4082012	4099012	4116012	4133012	4150012	4167012	4184012	4201012	4218012	4235012	4252012	4269012	4286012	4303012	4320012	4337012	4354012	4371012	4388012	4405012	4422012	4439012	4456012	4473012	4490012	4507012	4524012	4541012	4558012	4575012	4592012	4609012	4626012	4643012	4660012	4677012	4694012	4711012	4728012	4745012	4762012	4779012	4796012	4813012	4830012	4847012	4864012	4881012	4898012	4915012	4932012	4949012	4966012	4983012	5000012	5017012	5034012	5051012	5068012	5085012	5102012	5119012	5136012	5153012	5170012	5187012	5204012	5221012	5238012	5255012	5272012	5289012	5306012	5323012	5340012	5357012	5374012	5391012	5408012	5425012	5442012	5459012	5476012	5493012	5510012	5527012	5544012	5561012	5578012	5595012	5612012	5629012	5646012	5663012	5680012	5697012	5714012	5731012	5748012	5765012	5782012	5799012	5816012	5833012	5850012	5867012	5884012	5901012	5918012	5935012	5952012	5969012	5986012	6003012	6020012	6037012	6054012	6071012	6088012	6105012	6122012	6139012	6156012	6173012	6190012	6207012	6224012	6241012	6258012	6275012	6292012	6309012	6326012	6343012	6360012	6377012	6394012	6411012	6428012	6445012	6462012	6479012	6496012	6513012	6530012	6547012	6564012	6581012	6598012	6615012	6632012	6649012	6666012	6683012	6700012	6717012	6734012	6751012	6768012	6785012	6802012	6819012	6836012	6853012	6870012	6887012	6904012	6921012	6938012	6955012	6972012	6989012	7006012	7023012	7040012	7057012	7074012	7091012	7108012	7125012	7142012	7159012	7176012	7193012	7210012	7227012	7244012	7261012	7278012	7295012	7312012	7329012	7346012	7363012	7380012	7397012	7414012	7431012	7448012	7465012	7482012	7499012	7516012	7533012	7550012	7567012	7584012	7601012	7618012	7635012	7652012	7669012	7686012	7703012	7720012	7737012	7754012	7771012	7788012	7805012	7822012	7839012	7856012	7873012	7890012	7907012	7924012	7941012	7958012	7975012	7992012	8009012	8026012	8043012	8060012	8077012	8094012	8111012	8128012	8145012	8162012	8179012	8196012	8213012	8230012	8247012	8264012	8281012	8298012	8315012	8332012	8349012	8366012	8383012	8400012	8417012	8434012	8451012	8468012	8485012	8502012	8519012	8536012	8553012	8570012	8587012	8604012	8621012	8638012	8655012	8672012	8689012	8706012	8723012	8740012	8757012	8774012	8791012	8808012	8825012	8842012	8859012	8876012	8893012	8910012	8927012	8944012	8961012	8978012	8995012	9012012	9029012	9046012	9063012	9080012	9097012	9114012	9131012	9148012	9165012	9182012	9199012	9216012	9233012	9250012	9267012	9284012	9301012	9318012	9335012	9352012	9369012	9386012	9403012	9420012	9437012	9454012	9471012	9488012	9505012	9522012	9539012	9556012	9573012	9590012	9607012	9624012	9641012	9658012	9675012	9692012	9709012	9726012	9743012	9760012	9777012	9794012	9811012	9828012	9845012	9862012	9879012	9896012	9913012	9930012	9947012	9964012	9981012	9998012	10015012	10032012	10049012	10066012	10083012	10100012	10117012	10134012	10151012	10168012	10185012	10202012	10219012	10236012	10253012	10270012	10287012	10304012	10321012	10338012	10355012	10372012	10389012	10406012	10423012	10440012	10457012	10474012	10491012	10508012	10525012	10542012	10559012	10576012	10593012	10610012	10627012	10644012	10661012	10678012	10695012	10712012	10729012	10746012	10763012	10780012	10797012	10814012	10831012	108480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0215	0216	0217	0218	0219	0220	0221	0222	0223	0224	0225	0226	0227	0228	0229	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	0251	0252	0253	0254	0255	0256	0257	0258	0259	0260	0261	0262	0263	0264	0265	0266	0267	0268	0269	0270	0271	0272	0273	0274	0275	0276	0277	0278	0279	0280	0281	0282	0283	0284	0285	0286	0287	0288	0289	0290	0291	0292	0293	0294	0295	0296	0297	0298	0299	0300	0301	0302	0303	0304	0305	0306	0307	0308	0309	0310	0311	0312	0313	0314	0315	0316	0317	0318	0319	0320	0321	0322	0323	0324	0325	0326	0327	0328	0329	0330	0331	0332	0333	0334	0335	0336	0337	0338	0339	0340	0341	0342	0343	0344	0345	0346	0347	0348	0349	0350	0351	0352	0353	0354	0355	0356	0357	0358	0359	0360	0361	0362	0363	0364	0365	0366	0367	0368	0369	0370	0371	0372	0373	0374	0375	0376	0377	0378	0379	0380	0381	0382	0383	0384	0385	0386	0387	0388	0389	0390	0391	0392	0393	0394	0395	0396	0397	0398	0399	0400	0401	0402	0403	0404	0405	0406	0407	0408	0409	0410	0411	0412	0413	0414	0415	0416	0417	0418	0419	0420	0421	0422	0423	0424	0425	0426	0427	0428	0429	0430	0431	0432	0433	0434	0435	0436	0437	0438	0439	0440	0441	0442	0443	0444	0445	0446	0447	0448	0449	0450	0451	0452	0453	0454	0455	0456	0457	0458	0459	0460	0461	0462	0463	0464	0465	0466	0467	0468	0469	0470	0471	0472	0473	0474	0475	0476	0477	0478	0479	0480	0481	0482	0483	0484	0485	0486	0487	0488	0489	0490	0491	0492	0493	0494	0495	0496	0497	0498	0499	0500	0501	0502	0503	0504	0505	0506	0507	0508	0509	0510	0511	0512	0513	0514	0515	0516	0517	0518	0519	0520	0521	0522	0523	0524	0525	0526	0527	0528	0529	0530	0531	0532	0533	0534	0535	0536	0537	0538	0539	0540	0541	0542	0543	0544	0545	0546	0547	0548	0549	0550	0551	0552	0553	0554	0555	0556	0557	0558	0559	0560	0561	0562	0563	0564	0565	0566	0567	0568	0569	0570	0571	0572	0573	0574	0575	0576	0577	0578	0579	0580	0581	0582	0583	0584	0585	0586	0587	0588	0589	0590	0591	0592	0593	0594	0595	0596	0597	0598	0599	0600	0601	0602	0603	0604	0605	0606	0607	0608	0609	0610	0611	0612	0613	0614	0615	0616	0617	0618	0619	0620	0621	0622	0623	0624	0625	0626	0627	0628	0629	0630	0631	0632	0633	0634	0635	0636	0637	0638	0639	0640	0641	0642	0643	0644	0645	0646	0647	0648	0649	0650	0651	0652	0653	0654	0655	0656	0657	0658	0659	0660	0661	0662	0663	0664	0665	0666	0667	0668
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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and r

[illegible]

117.5	775831	52	751315	52	775721	52	621643	52	633843	52	918887	52	955117	52	995000	995000	992503	992503
118.0	775832	52	751316	52	775722	52	621644	52	633844	52	918888	52	955118	52	995001	995001	992504	992504
118.5	775833	52	751317	52	775723	52	621645	52	633845	52	918889	52	955119	52	995002	995002	992505	992505
119.0	775834	52	751318	52	775724	52	621646	52	633846	52	918890	52	955120	52	995003	995003	992506	992506
119.5	775835	52	751319	52	775725	52	621647	52	633847	52	918891	52	955121	52	995004	995004	992507	992507
120.0	775836	52	751320	52	775726	52	621648	52	633848	52	918892	52	955122	52	995005	995005	992508	992508
120.5	775837	52	751321	52	775727	52	621649	52	633849	52	918893	52	955123	52	995006	995006	992509	992509
121.0	775838	52	751322	52	775728	52	621650	52	633850	52	918894	52	955124	52	995007	995007	992510	992510
121.5	775839	52	751323	52	775729	52	621651	52	633851	52	918895	52	955125	52	995008	995008	992511	992511
122.0	775840	52	751324	52	775730	52	621652	52	633852	52	918896	52	955126	52	995009	995009	992512	992512
122.5	775841	52	751325	52	775731	52	621653	52	633853	52	918897	52	955127	52	995010	995010	992513	992513
123.0	775842	52	751326	52	775732	52	621654	52	633854	52	918898	52	955128	52	995011	995011	992514	992514
123.5	775843	52	751327	52	775733	52	621655	52	633855	52	918899	52	955129	52	995012	995012	992515	992515
124.0	775844	52	751328	52	775734	52	621656	52	633856	52	918900	52	955130	52	995013	995013	992516	992516
124.5	775845	52	751329	52	775735	52	621657	52	633857	52	918901	52	955131	52	995014	995014	992517	992517
125.0	775846	52	751330	52	775736	52	621658	52	633858	52	918902	52	955132	52	995015	995015	992518	992518
125.5	775847	52	751331	52	775737	52	621659	52	633859	52	918903	52	955133	52	995016	995016	992519	992519
126.0	775848	52	751332	52	775738	52	621660	52	633860	52	918904	52	955134	52	995017	995017	992520	992520
126.5	775849	52	751333	52	775739	52	621661	52	633861	52	918905	52	955135	52	995018	995018	992521	992521
127.0	775850	52	751334	52	775740	52	621662	52	633862	52	918906	52	955136	52	995019	995019	992522	992522
127.5	775851	52	751335	52	775741	52	621663	52	633863	52	918907	52	955137	52	995020	995020	992523	992523
128.0	775852	52	751336	52	775742	52	621664	52	633864	52	918908	52	955138	52	995021	995021	992524	992524

of the Department of the Interior, Bureau of Land Management, Washington, D.C. 20240

[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

Q	v	.99999	.99995	.99990	.99950	.99750	.99500	.99250	.99000
187.5	187.5	.11777	.11776	.11775	.11774	.11773	.11772	.11771	.11770
188.0	188.0	.11778	.11777	.11776	.11775	.11774	.11773	.11772	.11771
188.5	188.5	.11779	.11778	.11777	.11776	.11775	.11774	.11773	.11772
189.0	189.0	.11780	.11779	.11778	.11777	.11776	.11775	.11774	.11773
189.5	189.5	.11781	.11780	.11779	.11778	.11777	.11776	.11775	.11774
190.0	190.0	.11782	.11781	.11780	.11779	.11778	.11777	.11776	.11775
190.5	190.5	.11783	.11782	.11781	.11780	.11779	.11778	.11777	.11776
191.0	191.0	.11784	.11783	.11782	.11781	.11780	.11779	.11778	.11777
191.5	191.5	.11785	.11784	.11783	.11782	.11781	.11780	.11779	.11778
192.0	192.0	.11786	.11785	.11784	.11783	.11782	.11781	.11780	.11779
192.5	192.5	.11787	.11786	.11785	.11784	.11783	.11782	.11781	.11780
193.0	193.0	.11788	.11787	.11786	.11785	.11784	.11783	.11782	.11781
193.5	193.5	.11789	.11788	.11787	.11786	.11785	.11784	.11783	.11782
194.0	194.0	.11790	.11789	.11788	.11787	.11786	.11785	.11784	.11783
194.5	194.5	.11791	.11790	.11789	.11788	.11787	.11786	.11785	.11784
195.0	195.0	.11792	.11791	.11790	.11789	.11788	.11787	.11786	.11785
195.5	195.5	.11793	.11792	.11791	.11790	.11789	.11788	.11787	.11786
196.0	196.0	.11794	.11793	.11792	.11791	.11790	.11789	.11788	.11787
196.5	196.5	.11795	.11794	.11793	.11792	.11791	.11790	.11789	.11788
197.0	197.0	.11796	.11795	.11794	.11793	.11792	.11791	.11790	.11789
197.5	197.5	.11797	.11796	.11795	.11794	.11793	.11792	.11791	.11790
198.0	198.0	.11798	.11797	.11796	.11795	.11794	.11793	.11792	.11791
198.5	198.5	.11799	.11798	.11797	.11796	.11795	.11794	.11793	.11792
199.0	199.0	.11800	.11800	.11799	.11798	.11797	.11796	.11795	.11794
199.5	199.5	.11801	.11801	.11800	.11799	.11798	.11797	.11796	.11795
200.0	200.0	.11802	.11802	.11801	.11800	.11799	.11798	.11797	.11796
200.5	200.5	.11803	.11803	.11802	.11801	.11800	.11799	.11798	.11797
201.0	201.0	.11804	.11804	.11803	.11802	.11801	.11800	.11799	.11798
201.5	201.5	.11805	.11805	.11804	.11803	.11802	.11801	.11799	.11798
202.0	202.0	.11806	.11806	.11805	.11804	.11803	.11802	.11799	.11798
202.5	202.5	.11807	.11807	.11806	.11805	.11804	.11803	.11799	.11798
203.0	203.0	.11808	.11808	.11807	.11806	.11805	.11804	.11799	.11798
203.5	203.5	.11809	.11809	.11808	.11807	.11806	.11805	.11799	.11798
204.0	204.0	.11810	.11810	.11809	.11808	.11807	.11806	.11799	.11798
204.5	204.5	.11811	.11811	.11810	.11809	.11808	.11807	.11799	.11798
205.0	205.0	.11812	.11812	.11811	.11810	.11809	.11808	.11799	.11798
205.5	205.5	.11813	.11813	.11812	.11811	.11810	.11809	.11799	.11798
206.0	206.0	.11814	.11814	.11813	.11812	.11811	.11810	.11799	.11798
206.5	206.5	.11815	.11815	.11814	.11813	.11812	.11811	.11799	.11798
207.0	207.0	.11816	.11816	.11815	.11814	.11813	.11812	.11799	.11798
207.5	207.5	.11817	.11817	.11816	.11815	.11814	.11813	.11799	.11798
208.0	208.0	.11818	.11818	.11817	.11816	.11815	.11814	.11799	.11798
208.5	208.5	.11819	.11819	.11818	.11817	.11816	.11815	.11799	.11798
209.0	209.0	.11820	.11820	.11819	.11818	.11817	.11816	.11799	.11798
209.5	209.5	.11821	.11821	.11820	.11819	.11818	.11817	.11799	.11798
210.0	210.0	.11822	.11822	.11821	.11820	.11819	.11818	.11799	.11798
210.5	210.5	.11823	.11823	.11822	.11821	.11820	.11819	.11799	.11798
211.0	211.0	.11824	.11824	.11823	.11822	.11821	.11820	.11799	.11798
211.5	211.5	.11825	.11825	.11824	.11823	.11822	.11821	.11799	.11798
212.0	212.0	.11826	.11826	.11825	.11824	.11823	.11822	.11799	.11798

Percentage Points of the χ^2 Distribution Values at χ^2 in Terms of Q and r

[illegible]

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

15777	15778	15779	15780	15781	15782	15783	15784	15785	15786	15787	15788	15789	15790	15791	15792	15793	15794	15795	15796	15797	15798	15799	15800	15801	15802	15803	15804	15805	15806	15807	15808	15809	15810	15811	15812	15813	15814	15815	15816	15817	15818	15819	15820	15821	15822	15823	15824	15825	15826	15827	15828	15829	15830	15831	15832	15833	15834	15835	15836	15837	15838	15839	15840	15841	15842	15843	15844	15845	15846	15847	15848	15849	15850	15851	15852	15853	15854	15855	15856	15857	15858	15859	15860	15861	15862	15863	15864	15865	15866	15867	15868	15869	15870	15871	15872	15873	15874	15875	15876	15877	15878	15879	15880	15881	15882	15883	15884	15885	15886	15887	15888	15889	15890	15891	15892	15893	15894	15895	15896	15897	15898	15899	15900	15901	15902	15903	15904	15905	15906	15907	15908	15909	15910	15911	15912	15913	15914	15915	15916	15917	15918	15919	15920	15921	15922	15923	15924	15925	15926	15927	15928	15929	15930	15931	15932	15933	15934	15935	15936	15937	15938	15939	15940	15941	15942	15943	15944	15945	15946	15947	15948	15949	15950	15951	15952	15953	15954	15955	15956	15957	15958	15959	15960	15961	15962	15963	15964	15965	15966	15967	15968	15969	15970	15971	15972	15973	15974	15975	15976	15977	15978	15979	15980	15981	15982	15983	15984	15985	15986	15987	15988	15989	15990	15991	15992	15993	15994	15995	15996	15997	15998	15999	16000	16001	16002	16003	16004	16005	16006	16007	16008	16009	16010	16011	16012	16013	16014	16015	16016	16017	16018	16019	16020	16021	16022	16023	16024	16025	16026	16027	16028	16029	16030	16031	16032	16033	16034	16035	16036	16037	16038	16039	16040	16041	16042	16043	16044	16045	16046	16047	16048	16049	16050	16051	16052	16053	16054	16055	16056	16057	16058	16059	16060	16061	16062	16063	16064	16065	16066	16067	16068	16069	16070	16071	16072	16073	16074	16075	16076	16077	16078	16079	16080	16081	16082	16083	16084	16085	16086	16087	16088	16089	16090	16091	16092	16093	16094	16095	16096	16097	16098	16099	16100	16101	16102	16103	16104	16105	16106	16107	16108	16109	16110	16111	16112	16113	16114	16115	16116	16117	16118	16119	16120	16121	16122	16123	16124	16125	16126	16127	16128	16129	16130	16131	16132	16133	16134	16135	16136	16137	16138	16139	16140	16141	16142	16143	16144	16145	16146	16147	16148	16149	16150	16151	16152	16153	16154	16155	16156	16157	16158	16159	16160	16161	16162	16163	16164	16165	16166	16167	16168	16169	16170	16171	16172	16173	16174	16175	16176	16177	16178	16179	16180	16181	16182	16183	16184	16185
15950	15951	15952	15953	15954	15955	15956	15957	15958	15959	15960	15961	15962	15963	15964	15965	15966	15967	15968	15969	15970	15971	15972	15973	15974	15975	15976	15977	15978	15979	15980	15981	15982	15983	15984	15985	15986	15987	15988	15989	15990	15991	15992	15993	15994	15995	15996	15997	15998	15999	16000	16001	16002	16003	16004	16005	16006	16007	16008	16009	16010	16011	16012	16013	16014	16015	16016	16017	16018	16019	16020	16021	16022	16023	16024	16025	16026	16027	16028	16029	16030	16031	16032	16033	16034	16035	16036	16037	16038	16039	16040	16041	16042	16043	16044	16045	16046	16047	16048	16049	16050	16051	16052	16053	16054	16055	16056	16057	16058	16059	16060	16061	16062	16063	16064	16065	16066	16067	16068	16069	16070	16071	16072	16073	16074	16075	16076	16077	16078	16079	16080	16081	16082	16083	16084	16085	16086	16087	16088	16089	16090	16091	16092	16093	16094	16095	16096	16097	16098	16099	16100	16101	16102	16103	16104	16105	16106	16107	16108	16109	16110	16111	16112	16113	16114	16115	16116	16117	16118	16119	16120	16121	16122	16123	16124	16125	16126	16127	16128	16129	16130	16131	16132	16133	16134	16135	16136	16137	16138	16139	16140	16141	16142	16143	16144	16145	16146	16147	16148	16149	16150	16151	16152	16153	16154	16155	16156	16157	16158	16159	16160	16161	16162	16163	16164	16165	16166	16167	16168	16169	16170	16171	16172	16173	16174	16175	16176	16177	16178	16179	16180	16181	16182	16183	16184	16185																																																																																																																																																																													
16186	16187	16188	16189	16190	16191	16192	16193	16194	16195	16196	16197	16198	16199	16200	16201	16202	16203	16204	16205	16206	16207	16208	16209	16210	16211	16212	16213	16214	16215	16216	16217	16218	16219	16220	16221	16222	16223	16224	16225	16226	16227	16228	16229	16230	16231	16232	16233	16234	16235	16236	16237	16238	16239	16240	16241	16242	16243	16244	16245	16246	16247	16248	16249	16250	16251	16252	16253	16254	16255	16256	16257	16258	16259	16260	16261	16262	16263	16264	16265	16266	16267	16268	16269	16270	16271	16272	16273	16274	16275	16276	16277	16278	16279	16280	16281	16282	16283	16284	16285	16286	16287	16288	16289	16290	16291	16292	16293	16294	16295	16296	16297	16298	16299	16300	16301	16302	16303	16304	16305	16306	16307	16308	16309	16310	16311	16312	16313	16314	16315	16316	16317	16318	16319	16320	16321	16322	16323	16324	16325	16326	16327	16328	16329	16330	16331	16332	16333	16334	16335	16336	16337	16338	16339	16340	16341	16342	16343	16344	16345	16346	16347	16348	16349	16350	16351	16352	16353	16354	16355	16356	16357	16358	16359	16360	16361	16362	16363	16364	16365	16366	16367	16368	16369	16370	16371	16372	16373	16374	16375	16376	16377	16378	16379	16380	16381	16382	16383	16384	16385	16386	16387	16388	16389	16390	16391	16392	16393	16394	16395	16396	16397	16398	16399	16400	16401	16402	16403	16404	16405	16406	16407	16408	16409	16410	16411	16412	16413	16414	16415	16416	16417	16418	16419	16420	16421	16422	16423	16424	16425	16426	16427	16428	16429	16430	16431	16432	16433	16434	16435	16436	16437	16438	16439	16440	16441	16442	16443	16444	16445	16446	16447	16448	16449	16450	16451	16452	16453	16454	16455	16456	16457	16458	16459	16460	16461	16462	16463	16464	16465	16466	16467	16468	16469	16470	16471	16472	16473	16474	16475	16476	16477	16478	16479	16480	16481	16482	16483	16484	16485	16486	16487	16488	16489	16490	16491	16492	16493	16494	16495	16496	16497	16498	16499	16500																																																																																														

A few of the names of the persons who were present at the meeting are given below:

1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	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Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$.999999	.999995	.999990	.999950	.999900	.999500	.997500	.995000	.992500
337.5	.228056 03	.234824 03	.237933 03	.245697 03	.249313 03	.258501 03	.269143 03	.274336 03	.277592 03
338.0	.228465 03	.235239 03	.238352 03	.246122 03	.249741 03	.258938 03	.269589 03	.274787 03	.278045 03
338.5	.228874 03	.235654 03	.238770 03	.246547 03	.250170 03	.259375 03	.270035 03	.275237 03	.278498 03
339.0	.229283 03	.236070 03	.239188 03	.246973 03	.250598 03	.259812 03	.270482 03	.275688 03	.278952 03
339.5	.229692 03	.236485 03	.239606 03	.247398 03	.251027 03	.260246 03	.270928 03	.276138 03	.279405 03
340.0	.230101 03	.236891 03	.240025 03	.247824 03	.251456 03	.260685 03	.271374 03	.276589 03	.279858 03
340.5	.230510 03	.237316 03	.240443 03	.248249 03	.251885 03	.261122 03	.271860 03	.277039 03	.280312 03
341.0	.230920 03	.237732 03	.240862 03	.248675 03	.252313 03	.261559 03	.272266 03	.277490 03	.280765 03
341.5	.231329 03	.238147 03	.241280 03	.249100 03	.252742 03	.261996 03	.272743 03	.277941 03	.281218 03
342.0	.231738 03	.238563 03	.241699 03	.249526 03	.253171 03	.262434 03	.273159 03	.278391 03	.281672 03
342.5	.232143 03	.238979 03	.242117 03	.249952 03	.253600 03	.262871 03	.273605 03	.278842 03	.282125 03
343.0	.232557 03	.239395 03	.242536 03	.250378 03	.254029 03	.263308 03	.274052 03	.279293 03	.282579 03
343.5	.232967 03	.239811 03	.242955 03	.250804 03	.254459 03	.263745 03	.274498 03	.279744 03	.283033 03
344.0	.233376 03	.240227 03	.243374 03	.251229 03	.254888 03	.264182 03	.274945 03	.280195 03	.283486 03
344.5	.233788 03	.240643 03	.243793 03	.251655 03	.255317 03	.264620 03	.275391 03	.280646 03	.283940 03
345.0	.234196 03	.241059 03	.244212 03	.252081 03	.255746 03	.265057 03	.275838 03	.281097 03	.284383 03
345.5	.234606 03	.241475 03	.244631 03	.252508 03	.256176 03	.265495 03	.276284 03	.281548 03	.284847 03
346.0	.235016 03	.241891 03	.245050 03	.252934 03	.256605 03	.265932 03	.276731 03	.281999 03	.285301 03
346.5	.235425 03	.242307 03	.245469 03	.253360 03	.257034 03	.266370 03	.277178 03	.282450 03	.285755 03
347.0	.235836 03	.242724 03	.245888 03	.253786 03	.257464 03	.266807 03	.277524 03	.282901 03	.286209 03
347.5	.236246 03	.243140 03	.246307 03	.254212 03	.257893 03	.267245 03	.278071 03	.283352 03	.286662 03
348.0	.236656 03	.243556 03	.246727 03	.254639 03	.258323 03	.267683 03	.278518 03	.283803 03	.287116 03
348.5	.237066 03	.243973 03	.247146 03	.255065 03	.258753 03	.268120 03	.278995 03	.284254 03	.287570 03
349.0	.237476 03	.244390 03	.247565 03	.255492 03	.259182 03	.268558 03	.279442 03	.284706 03	.288024 03
349.5	.237887 03	.244806 03	.247985 03	.255918 03	.259612 03	.268996 03	.279859 03	.285158 03	.288478 03
350.0	.238297 03	.245223 03	.248404 03	.256345 03	.260042 03	.269434 03	.280305 03	.285609 03	.288932 03
350.5	.238707 03	.245640 03	.248824 03	.256771 03	.260472 03	.269871 03	.280752 03	.286059 03	.289386 03
351.0	.239118 03	.246056 03	.249244 03	.257198 03	.260902 03	.270309 03	.281199 03	.286511 03	.289840 03
351.5	.239528 03	.246473 03	.249663 03	.257625 03	.261331 03	.270747 03	.281647 03	.286962 03	.290297 03
352.0	.239939 03	.246890 03	.250083 03	.258051 03	.261761 03	.271185 03	.282094 03	.287414 03	.290748 03
352.5	.240350 03	.247307 03	.250503 03	.258478 03	.262191 03	.271623 03	.282541 03	.287865 03	.291203 03
353.0	.240761 03	.247724 03	.250923 03	.258905 03	.262622 03	.272062 03	.282988 03	.288317 03	.291657 03
353.5	.241171 03	.248141 03	.251343 03	.259332 03	.263052 03	.272500 03	.283435 03	.288768 03	.292111 03
354.0	.241582 03	.248558 03	.251763 03	.259759 03	.263482 03	.272938 03	.283882 03	.289220 03	.292565 03
354.5	.241993 03	.248976 03	.252183 03	.260186 03	.263912 03	.273376 03	.284330 03	.289671 03	.293020 03
355.0	.242404 03	.249393 03	.252603 03	.260613 03	.264342 03	.273814 03	.284777 03	.290123 03	.293474 03
355.5	.242815 03	.249810 03	.253023 03	.261040 03	.264773 03	.274253 03	.285224 03	.290575 03	.293928 03
356.0	.243227 03	.250228 03	.253443 03	.261467 03	.265213 03	.274691 03	.285672 03	.291026 03	.294383 03
356.5	.243638 03	.250645 03	.253864 03	.261895 03	.265633 03	.275130 03	.286119 03	.291478 03	.294837 03
357.0	.244049 03	.251063 03	.254284 03	.262322 03	.266064 03	.275568 03	.286567 03	.291930 03	.295292 03
357.5	.244460 03	.251480 03	.254704 03	.262749 03	.266494 03	.276006 03	.287014 03	.292382 03	.295746 03
358.0	.244872 03	.251898 03	.255125 03	.263177 03	.266925 03	.276445 03	.287462 03	.292834 03	.296201 03
358.5	.245283 03	.252315 03	.255546 03	.263604 03	.267356 03	.276884 03	.287909 03	.293286 03	.296655 03
359.0	.245695 03	.252733 03	.255966 03	.264032 03	.267786 03	.277322 03	.288357 03	.293737 03	.297110 03
359.5	.246106 03	.253151 03	.256386 03	.264459 03	.268217 03	.277761 03	.288805 03	.294189 03	.297564 03
360.0	.246518 03	.253569 03	.256807 03	.264887 03	.268648 03	.278193 03	.289232 03	.294641 03	.298010 03
360.5	.246930 03	.253987 03	.257228 03	.265314 03	.269079 03	.278638 03	.289678 03	.295093 03	.298474 03
361.0	.247342 03	.254405 03	.257649 03	.265742 03	.269509 03	.279077 03	.290118 03	.295545 03	.298933 03
361.5	.247754 03	.254823 03	.258069 03	.266171 03	.270040 03	.279616 03	.290596 03	.295998 03	.299383 03
362.0	.248166 03	.255241 03	.258488 03	.266593 03	.270461 03	.279995 03	.291074 03	.296450 03	.299838 03

Percentage Points of the χ^2 -Distribution Values of χ^2 in Terms of Q and r

255653	255654	255655	255656	255657	255658	255659	255660	255661	255662	255663	255664	255665	255666	255667	255668	255669	255670	255671	255672	255673	255674	255675	255676	255677	255678	255679	255680	255681	255682	255683	255684	255685	255686	255687	255688	255689	255690	255691	255692	255693	255694	255695	255696	255697	255698	255699	255700	255701	255702	255703	255704	255705	255706	255707	255708	255709	255710	255711	255712	255713	255714	255715	255716	255717	255718	255719	255720	255721	255722	255723	255724	255725	255726	255727	255728	255729	255730	255731	255732	255733	255734	255735	255736	255737	255738	255739	255740	255741	255742	255743	255744	255745	255746	255747	255748	255749	255750	255751	255752	255753	255754	255755	255756	255757	255758	255759	255760	255761	255762	255763	255764	255765	255766	255767	255768	255769	255770	255771	255772	255773	255774	255775	255776	255777	255778	255779	255780	255781	255782	255783	255784	255785	255786	255787	255788	255789	255790	255791	255792	255793	255794	255795	255796	255797	255798	255799	255800	255801	255802	255803	255804	255805	255806	255807	255808	255809	255810	255811	255812	255813	255814	255815	255816	255817	255818	255819	255820	255821	255822	255823	255824	255825	255826	255827	255828	255829	255830	255831	255832	255833	255834	255835	255836	255837	255838	255839	255840	255841	255842	255843	255844	255845	255846	255847	255848	255849	255850	255851	255852	255853	255854	255855	255856	255857	255858	255859	255860	255861	255862	255863	255864	255865	255866	255867	255868	255869	255870	255871	255872	255873	255874	255875	255876	255877	255878	255879	255880	255881	255882	255883	255884	255885	255886	255887	255888	255889	255890	255891	255892	255893	255894	255895	255896	255897	255898	255899	255900	255901	255902	255903	255904	255905	255906	255907	255908	255909	255910	255911	255912	255913	255914	255915	255916	255917	255918	255919	255920	255921	255922	255923	255924	255925	255926	255927	255928	255929	255930	255931	255932	255933	255934	255935	255936	255937	255938	255939	255940	255941	255942	255943	255944	255945	255946	255947	255948	255949	255950	255951	255952	255953	255954	255955	255956	255957	255958	255959	255960	255961	255962	255963	255964	255965	255966	255967	255968	255969	255970	255971	255972	255973	255974	255975	255976	255977	255978	255979	255980	255981	255982	255983	255984	255985	255986	255987	255988	255989	255990	255991	255992	255993	255994	255995	255996	255997	255998	255999	256000	256001	256002	256003	256004	256005	256006	256007	256008	256009	256010	256011	256012	256013	256014	256015	256016	256017	256018	256019	256020	256021	256022	256023	256024	256025	256026	256027	256028	256029	256030	256031	256032	256033	256034	256035	256036	256037	256038	256039	256040	256041	256042	256043	256044	256045	256046	256047	256048	256049	256050	256051	256052	256053	256054	256055	256056	256057	256058	256059	256060	256061	256062	256063	256064	256065	256066	256067	256068	256069	256070	256071	256072	256073	256074	256075	256076	256077	256078	256079	256080	256081	256082	256083	256084	256085	256086	256087	256088	256089	256090	256091	256092	256093	256094	256095	256096	256097	256098	256099	256100	256101	256102	256103	256104	256105	256106	256107	256108	256109	256110	256111	256112	256113	256114	256115	256116	256117	256118	256119	256120	256121	256122	256123	256124	256125	256126	256127	256128	256129	256130	256131	256132	256133	256134	256135	256136	256137	256138	256139	256140	256141	256142	256143	256144	256145	256146	256147	256148	256149	256150	256151	256152	256153	256154	256155	256156	256157	256158	256159	256160	256161	256162	256163	256164	256165	256166	256167	256168	256169	256170	256171	256172	256173	256174	256175	256176	256177	256178	256179	256180	256181	256182	256183	256184	256185	256186	256187	256188	256189	256190	256191	256192	256193	256194	256195	256196	256197	256198	256199	256200	256201	256202	256203	256204	256205	256206	256207	256208	256209	256210	256211	256212	256213	256214	256215	256216	256217	256218	256219	256220	256221	256222	256223	256224	256225	256226	256227	256228	256229	256230	256231	256232	256233	256234	256235	256236	256237	256238	256239	256240	256241	256242	256243	256244	256245	256246	256247	256248	256249	256250	256251	256252	256253	256254	256255	256256	256257	256258	256259	256260	256261	256262	256263	256264	256265	256266	256267	256268	256269	256270	256271	256272	256273	256274	256275	256276	256277	256278	256279	256280	256281	256282	256283	256284	256285	256286	256287	256288	256289	256290	256291	256292	256293	256294	256295	256296	256297	256298	256299	256300	256301	256302	256303	256304	256305	256306	256307	256308	256309	256310	256311	256312	256313	256314	256315	256316	256317	256318	256319	256320	256321	256322	256323	256324	256325	256326	256327	256328	256329	256330	256331	256332	256333	256334	256335	256336	256337	256338	256339	256340	256341	256342	256343	256344	256345	256346	256347	256348	256349	256350	256351	256352	256353	256354	256355	256356	256357	256358	256359	256360	256361	256362	256363	256364	256365	256366	256367	256368	256369	256370	256371	256372	256373	256374	256375	256376	256377	256378	256379	256380	256381	256382	256383	256384	256385	256386	256387	256388	256389	256390	256391	256392	256393	256394	256395	256396	256397	256398	256399	256400	256401	256402	256403	256404	256405	256406	256407	256408	256409	256410	256411	256412	256413	256414	256415	256416	256417	256418	256419	256420	256421	256422	256423	256424	256425	256426	256427	256428	256429	256430	256431	256432	256433	256434	256435	256436	256437	256438	256439	256440	256441	256442	256443	256444	256445	256446	256447	256448	256449	256450	256451	256452	256453	256454	256455	256456	256457	256458	256459	256460	256461	256462	256463	256464	256465	256466	256467	256468	256469	256470	256471	256472	256473	256474	256475	256476	256477	256478	256479	256480	256481	256482	256483	256484	256485	256486	256487	256488	256489	256490	256491	256492	256493	256494	256495	256496	256497	256498	256499	256500	256501	256502	256503	256504	256505	256506	256507	256508	256509	256510	256511	256512	256513	256514	256515	256516	256517	256518	256519	256520	256521	256522	256523	256524	256525	256526	256527	256528	256529	256530	256531	256532	256533	256534	256535	256536	256537	256538	256539	256540	256541	256542	256543	256544	256545	256546	256547	256548	256549	256550	256551	256552	256553	256554	256555	256556	256557	256558	256559	256560	256561	256562	256563	256564	256565	256566	256567	256568	256569	256570	256571	256572	256573	256574	256575	256576	256577	256578	256579	256580	256581	256582	256583	256584	256585	256586	256587	256588	256589	256590	256591	256592	256593	256594	256595	256596	256597	256598	256599	256600	256601	256602	256603	256604	256605	256606	256607	256608	256609	256610	256611	256612	256613	256614	256615	256616	256617	256618	256619	256620	256621	256622	256623	256624	256625	256626	256627	256628	256629	256630	256631	256632	256633	256634	256635	256636	256637	256638	256639	256640	256641	256642	256643	256644	256645	256646	256647	256648	256649	256650	256651	256652	256653	256654	256655	256656	256657	256658	256659	256660	256661	256662	256663	256664	256665	256666	256667	256668	256669	256670	256671	256672	256673	256674	256675	256676	256677	256678	256679	256680	256681	256682	256683	256684	256685	256686	256687	256688	256689	256690	256691	256692	256693	256694	256695	256696	256697	256698	256699	256700	256701	256702	256703	256704	256705	256706	256707	256708	256709	256710	256711	256712	256713	256714	256715	256716	256717	256718	256719	256720	256721	256722	256723	256724	256725	256726	256727	256728	256729	256730	256731	256732	256733	256734	256735	256736	256737	256738	256739	256740	256741	256742	256743	256744	256745	256746	256747	256748	256749	256750	256751	256752	256753	256754	256755	256756	256757	256758	256759	256760	256761	256762	256763	256764	256765	256766	256767	256768	256769	256770	256771	256772	256773	256774	256775	256776	256777	256
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Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and r

192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

Q	ν	.99999	.99995	.99990	.99950	.99900	.99750	.99500	.99250	.99000
412.5	290557	.297736	.301262	.310044	.324485	.329405	.336448	.342273	.345921	.349250
413.0	290675	.298161	.301697	.310476	.324917	.329837	.336880	.342705	.346353	.349683
413.5	290792	.298554	.302113	.310898	.325330	.330250	.337350	.343184	.346832	.350161
414.0	290909	.298948	.302539	.311334	.325743	.330663	.337802	.343636	.347284	.350613
414.5	291026	.299341	.302965	.311773	.326156	.331076	.338253	.344089	.347737	.351066
415.0	291143	.299735	.303392	.312186	.326566	.331486	.338704	.344540	.348188	.351517
415.5	291260	.300128	.303818	.312593	.326976	.331896	.339155	.345005	.348653	.351982
416.0	291377	.300522	.304244	.313004	.327386	.332304	.339607	.345466	.349114	.352443
416.5	291494	.300915	.304670	.313415	.327796	.332715	.340058	.345927	.349575	.352904
417.0	291611	.301308	.305096	.313826	.328206	.333125	.340509	.346388	.350036	.353365
417.5	291728	.301701	.305523	.314237	.328616	.333535	.341042	.346921	.350569	.353900
418.0	291845	.302094	.305952	.314648	.329026	.333945	.341584	.347463	.351111	.354442
418.5	291962	.302487	.306389	.315059	.329436	.334355	.342094	.347973	.351621	.354952
419.0	292079	.302880	.306825	.315470	.329846	.334765	.342544	.348423	.352030	.355361
419.5	292196	.303273	.307263	.315881	.330256	.335175	.342964	.348843	.352439	.355770
420.0	292313	.303666	.307699	.316292	.330666	.335585	.343374	.349253	.352848	.356179
420.5	292430	.304059	.308136	.316703	.331076	.335995	.343784	.349663	.353258	.356589
421.0	292547	.304452	.308574	.317114	.331486	.336405	.344194	.350073	.353678	.357009
421.5	292664	.304845	.308999	.317525	.331896	.336815	.344604	.350483	.354088	.357419
422.0	292781	.305238	.309436	.317936	.332306	.337225	.345014	.350893	.354498	.357829
422.5	292898	.305631	.309869	.318347	.332716	.337635	.345424	.351303	.354908	.358239
423.0	293015	.306024	.310306	.318758	.333126	.338055	.345834	.351713	.355318	.358649
423.5	293132	.306417	.310743	.319169	.333536	.338465	.346244	.352123	.355728	.359059
424.0	293249	.306810	.311181	.319580	.333946	.338875	.346654	.352533	.356138	.359469
424.5	293366	.307203	.311619	.320000	.334356	.339285	.347064	.352943	.356548	.359879
425.0	293483	.307596	.312057	.320411	.334766	.339705	.347474	.353353	.356958	.360289
425.5	293600	.307989	.312495	.320822	.335176	.340125	.347884	.353763	.357368	.360699
426.0	293717	.308382	.312933	.321233	.335586	.340535	.348294	.354173	.357778	.361110
426.5	293834	.308775	.313374	.321644	.335996	.340945	.348704	.354583	.358188	.361521
427.0	293951	.309168	.313825	.322055	.336406	.341355	.349114	.354993	.358598	.361932
427.5	294068	.309561	.314236	.322466	.336816	.341765	.349524	.355403	.359008	.362343
428.0	294185	.309954	.314647	.322877	.337226	.342176	.349935	.355813	.359418	.362754
428.5	294302	.310347	.315058	.323288	.337636	.342587	.350296	.356205	.359810	.363165
429.0	294419	.310740	.315401	.323699	.338046	.342997	.350706	.356615	.360220	.363576
429.5	294536	.311133	.315844	.324110	.338456	.343408	.351117	.357026	.360631	.363987
430.0	294653	.311526	.316287	.324521	.338866	.343819	.351527	.357436	.361042	.364353
430.5	294770	.311919	.316730	.324932	.339276	.344230	.351937	.357846	.361453	.364764
431.0	294887	.312312	.317163	.325343	.339686	.344641	.352347	.358256	.361864	.365175
431.5	295004	.312705	.317606	.325754	.340096	.345051	.352757	.358666	.362275	.365586
432.0	295121	.313098	.318049	.326165	.340506	.345467	.353167	.359076	.362686	.365997
432.5	295238	.313491	.318492	.326576	.340916	.345877	.353577	.359486	.363097	.366408
433.0	295355	.313884	.318935	.326987	.341326	.346287	.353988	.359897	.363508	.366819
433.5	295472	.314277	.319378	.327398	.341736	.346698	.354398	.360308	.363919	.367230
434.0	295589	.314670	.319821	.327809	.342146	.347109	.354809	.360719	.364330	.367641
434.5	295706	.315063	.320264	.328220	.342556	.347521	.355219	.361129	.364740	.367951
435.0	295823	.315456	.320707	.328631	.342966	.347937	.355630	.361539	.365150	.368361
435.5	295940	.315849	.321150	.329042	.343376	.348353	.356040	.361949	.365560	.368771
436.0	296057	.316242	.321603	.329453	.343786	.348767	.356451	.362359	.365970	.369181
436.5	296174	.316635	.322056	.329864	.344196	.349187	.356861	.362769	.366380	.369591
437.0	296291	.317028	.322509	.330275	.344606	.349607	.357272	.363179	.366790	.370001
437.5	296408	.317421	.322942	.330686	.345016	.350027	.357692	.363589	.367200	.370411
438.0	296525	.317814	.323375	.331097	.345426	.350437	.358102	.363999	.367610	.370822
438.5	296642	.318207	.323826	.331508	.345836	.350848	.358513	.364409	.368020	.371233
439.0	296759	.318600	.324277	.331919	.346246	.351259	.358924	.364819	.368430	.371644
439.5	296876	.318993	.324788	.332330	.346656	.351670	.359335	.365229	.368840	.372055
440.0	296993	.319386	.325299	.332741	.347066	.352081	.359746	.365639	.369250	.372466
440.5	297110	.319779	.325840	.333152	.347476	.352492	.360157	.366047	.369658	.372877
441.0	297227	.320172	.326293	.333563	.347886	.352903	.360567	.366457	.370068	.373289
441.5	297344	.320565	.326724	.333974	.348296	.353314	.360978	.366868	.370479	.373690
442.0	297461	.320958	.327135	.334385	.348706	.353725	.361388	.367278	.370890	.374101
442.5	297578	.321351	.327568	.334796	.349116	.354136	.361798	.367688	.371301	.374512
443.0	297695	.321744	.328001	.335207	.349526	.354547	.362209	.368099	.371712	.374923
443.5	297812	.322137	.328434	.335618	.349936	.354958	.362619	.368509	.372123	.375334
444.0	297929	.322530	.328867	.336029	.350346	.355367	.363030	.368920	.372534	.375745
444.5	298046	.322923	.329300	.336440	.350756	.355777	.363440	.369330	.372945	.376156
445.0	298163	.323316	.329733	.336851	.351166	.356187	.363851	.369741	.373356	.376567
445.5	298280	.323709	.330166	.337262	.351576	.356597	.364261	.370151	.373762	.376973
446.0	298397	.324102	.330609	.337673	.351986	.356997	.364671	.370561	.374172	.377383
446.5	298514	.324495	.331052	.338078	.352396	.357407	.365081	.370971	.374582	.377793
447.0	298631	.324888	.331485	.338504	.352806	.357817	.365491	.371381	.375002	.378213
447.5	298748	.325281	.331918	.338933	.353216	.358227	.365905	.371791	.375412	.378623
448.0	298865	.325674	.332351	.339357	.353626	.358637	.366319	.372197	.375818	.379029
448.5	298982	.326067	.332784	.340000	.354036	.359047	.366743	.372603	.376224	.379435
449.0	299099	.326460	.333217	.340411	.354446	.359457	.367163	.373009	.376630	.379841
449.5	299216	.326853	.333650	.340822	.354856	.359867	.367573	.373415	.377036	.380247
450.0	299333	.327246	.334083	.341233	.355266	.360277	.367983	.373821	.377442	.380653

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν	.99999	.99995	.99990	.99950	.99900	.99750	.99500	.99250	.99000
427.5	31.990	31.987	31.984	31.971	31.958	31.945	31.932	31.919	31.906
428.0	31.991	31.988	31.985	31.972	31.959	31.946	31.933	31.920	31.907
428.5	31.992	31.989	31.986	31.973	31.960	31.947	31.934	31.921	31.908
429.0	31.993	31.990	31.987	31.974	31.961	31.948	31.935	31.922	31.909
429.5	31.994	31.991	31.988	31.975	31.962	31.949	31.936	31.923	31.910
430.0	31.995	31.992	31.989	31.976	31.963	31.950	31.937	31.924	31.911
430.5	31.996	31.993	31.990	31.977	31.964	31.951	31.938	31.925	31.912
431.0	31.997	31.994	31.991	31.978	31.965	31.952	31.939	31.926	31.913
431.5	31.998	31.995	31.992	31.979	31.966	31.953	31.940	31.927	31.914
432.0	31.999	31.996	31.993	31.980	31.967	31.954	31.941	31.928	31.915
432.5	32.000	31.997	31.994	31.981	31.968	31.955	31.942	31.929	31.916
433.0	32.001	31.998	31.995	31.982	31.969	31.956	31.943	31.930	31.917
433.5	32.002	31.999	31.996	31.983	31.970	31.957	31.944	31.931	31.918
434.0	32.003	32.000	31.997	31.984	31.971	31.958	31.945	31.932	31.919
434.5	32.004	32.001	31.998	31.985	31.972	31.959	31.946	31.933	31.920
435.0	32.005	32.002	31.999	31.986	31.973	31.960	31.947	31.934	31.921
435.5	32.006	32.003	32.000	31.987	31.974	31.961	31.948	31.935	31.922
436.0	32.007	32.004	32.001	31.988	31.975	31.962	31.949	31.936	31.923
436.5	32.008	32.005	32.002	31.989	31.976	31.963	31.950	31.937	31.924
437.0	32.009	32.006	32.003	31.990	31.977	31.964	31.951	31.938	31.925
437.5	32.010	32.007	32.004	31.991	31.978	31.965	31.952	31.939	31.926
438.0	32.011	32.008	32.005	31.992	31.979	31.966	31.953	31.940	31.927
438.5	32.012	32.009	32.006	31.993	31.980	31.967	31.954	31.941	31.928
439.0	32.013	32.010	32.007	31.994	31.981	31.968	31.955	31.942	31.929
439.5	32.014	32.011	32.008	31.995	31.982	31.969	31.956	31.943	31.930
440.0	32.015	32.012	32.009	31.996	31.983	31.970	31.957	31.944	31.931
440.5	32.016	32.013	32.010	31.997	31.984	31.971	31.958	31.945	31.932
441.0	32.017	32.014	32.011	31.998	31.985	31.972	31.959	31.946	31.933
441.5	32.018	32.015	32.012	31.999	31.986	31.973	31.960	31.947	31.934
442.0	32.019	32.016	32.013	32.000	31.987	31.974	31.961	31.948	31.935
442.5	32.020	32.017	32.014	32.001	31.988	31.975	31.962	31.949	31.936
443.0	32.021	32.018	32.015	32.002	31.989	31.976	31.963	31.950	31.937
443.5	32.022	32.019	32.016	32.003	31.990	31.977	31.964	31.951	31.938
444.0	32.023	32.020	32.017	32.004	31.991	31.978	31.965	31.952	31.939
444.5	32.024	32.021	32.018	32.005	31.992	31.979	31.966	31.953	31.940
445.0	32.025	32.022	32.019	32.006	31.993	31.980	31.967	31.954	31.941
445.5	32.026	32.023	32.020	32.007	31.994	31.981	31.968	31.955	31.942
446.0	32.027	32.024	32.021	32.008	31.995	31.982	31.969	31.956	31.943
446.5	32.028	32.025	32.022	32.009	31.996	31.983	31.970	31.957	31.944
447.0	32.029	32.026	32.023	32.010	31.997	31.984	31.971	31.958	31.945
447.5	32.030	32.027	32.024	32.011	31.998	31.985	31.972	31.959	31.946
448.0	32.031	32.028	32.025	32.012	31.999	31.986	31.973	31.960	31.947
448.5	32.032	32.029	32.026	32.013	32.000	31.987	31.974	31.961	31.948
449.0	32.033	32.030	32.027	32.014	32.001	31.988	31.975	31.962	31.949
449.5	32.034	32.031	32.028	32.015	32.002	31.989	31.976	31.963	31.950
450.0	32.035	32.032	32.029	32.016	32.003	31.990	31.977	31.964	31.951
450.5	32.036	32.033	32.030	32.017	32.004	31.991	31.978	31.965	31.952
451.0	32.037	32.034	32.031	32.018	32.005	31.992	31.979	31.966	31.953
451.5	32.038	32.035	32.032	32.019	32.006	31.993	31.980	31.967	31.954
452.0	32.039	32.036	32.033	32.020	32.007	31.994	31.981	31.968	31.955
452.5	32.040	32.037	32.034	32.021	32.008	31.995	31.982	31.969	31.956
453.0	32.041	32.038	32.035	32.022	32.009	31.996	31.983	31.970	31.957
453.5	32.042	32.039	32.036	32.023	32.010	31.997	31.984	31.971	31.958
454.0	32.043	32.040	32.037	32.024	32.011	31.998	31.985	31.972	31.959
454.5	32.044	32.041	32.038	32.025	32.012	31.999	31.986	31.973	31.960
455.0	32.045	32.042	32.039	32.026	32.013	32.000	31.987	31.974	31.961
455.5	32.046	32.043	32.040	32.027	32.014	32.001	31.988	31.975	31.962
456.0	32.047	32.044	32.041	32.028	32.015	32.002	31.989	31.976	31.963
456.5	32.048	32.045	32.042	32.029	32.016	32.003	31.990	31.977	31.964
457.0	32.049	32.046	32.043	32.030	32.017	32.004	31.991	31.978	31.965
457.5	32.050	32.047	32.044	32.031	32.018	32.005	31.992	31.979	31.966
458.0	32.051	32.048	32.045	32.032	32.019	32.006	31.993	31.980	31.967
458.5	32.052	32.049	32.046	32.033	32.020	32.007	31.994	31.981	31.968
459.0	32.053	32.050	32.047	32.034	32.021	32.008	31.995	31.982	31.969
459.5	32.054	32.051	32.048	32.035	32.022	32.009	31.996	31.983	31.970
460.0	32.055	32.052	32.049	32.036	32.023	32.010	31.997	31.984	31.971
460.5	32.056	32.053	32.050	32.037	32.024	32.011	31.998	31.985	31.972
461.0	32.057	32.054	32.051	32.038	32.025	32.012	31.999	31.986	31.973
461.5	32.058	32.055	32.052	32.039	32.026	32.013	32.000	31.987	31.974
462.0	32.059	32.056	32.053	32.040	32.027	32.014	32.001	31.988	31.975
462.5	32.060	32.057	32.054	32.041	32.028	32.015	32.002	31.989	31.976
463.0	32.061	32.058	32.055	32.042	32.029	32.016	32.003	31.990	31.977
463.5	32.062	32.059	32.056	32.043	32.030	32.017	32.004	31.991	31.978
464.0	32.063	32.060	32.057	32.044	32.031	32.018	32.005	31.992	31.979
464.5	32.064	32.061	32.058	32.045	32.032	32.019	32.006	31.993	31.980
465.0	32.065	32.062	32.059	32.046	32.033	32.020	32.007	31.994	31.981
465.5	32.066	32.063	32.060	32.047	32.034	32.021	32.008	31.995	31.982
466.0	32.067	32.064	32.061	32.048	32.035	32.022	32.009	31.996	31.983
466.5	32.068	32.065	32.062	32.049	32.036	32.023	32.010	31.997	31.984
467.0	32.069	32.066	32.063	32.050	32.037	32.024	32.011	31.998	31.985
467.5	32.070	32.067	32.064	32.051	32.038	32.025	32.012	31.999	31.986
468.0	32.071	32.068	32.065	32.052	32.039	32.026	32.013	32.000	31.987
468.5	32.072	32.069	32.066	32.053	32.040	32.027	32.014	32.001	31.988
469.0	32.073	32.070	32.067	32.054	32.041	32.028	32.015	32.002	31.989
469.5	32.074	32.071	32.068	32.055	32.042	32.029	32.016	32.003	31.990
470.0	32.075	32.072	32.069	32.056	32.043	32.030	32.017	32.004	31.991
470.5	32.076	32.073	32.070	32.057	32.044	32.031	32.018	32.005	31.992
471.0	32.077	32.074	32.071	32.058	32.045	32.032	32.019	32.006	31.993
471.5	32.078	32.075	32.072	32.059	32.046	32.033	32.020	32.007	31.994
472.0	32.079	32.076	32.073	32.060	32.047	32.034	32.021	32.008	31.995
472.5	32.080	32.077	32.074	32.061	32.048	32.035	32.022	32.009	31.996
473.0	32.081	32.078	32.075	32.062	32.049	32.036	32.023	32.010	31.997
473.5	32.082	32.079	32.076	32.063	32.050	32.037	32.024	32.011	31.998
474.0	32.083	32.080	32.077	32.064	32.051	32.038	32.025	32.012	31.999
474.5	32.084	32.081	32.078	32.065	32.052	32.039	32.026	32.013	32.000
475.0	32.085	32.082	32.079	32.066	32.053	32.040	32.027	32.014	32.001
475.5	32.086	32.083	32.080	32.067	32.054	32.041	32.028	32.015	32.002
476.0	32.087	32.084	32.081	32.068	32.055	32.042	32.029	32.016	32.003
476.5	32.088	32.085	32.082	32.069	32.056	32.043	32.030	32.017	32.004
477.0	32.089	32.086	32.083	32.070	32.057	32.044	32.031	32.018	32.005
477.5	32.090	32.087	32.084	32.071	32.058	32.045	32.032	32.019	32.006
478.0	32.091	32.088	32.085	32.072	32.059	32.046	32.033	32.020	32.007
478.5	32.092	32.089	32.086	32.073	32.060	32.047	32.034	32.021	32.008
479.0	32.093	32.090	32.087	32.074	32.061	32.048	32.035	32.022	32.009
479.5	32.094	32.091	32.088	32.075	32.062	32.049	32.036	32.023	32.010
480.0	32.095	32.092	32.089	32.076	32.063	32.050	32.037	32.024	32.011
480.5	32.096	32.093	32.090	32.077	32.064	32.051	32.0		

Percentage Points of the χ^2 -Distribution Values of χ^2 in Terms of Q and ν

[illegible]

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[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and p

Q	.99000	.97500	.95000	.92500	.90000	.87500	.85000	.82500	.80000	.77500	.75000	.72500	.70000	.67500	.65000	.62500	.60000	.57500	.55000	.52500	.50000	.47500	.45000	.42500	.40000	.37500	.35000	.32500	.30000	.27500	.25000	.22500	.20000	.17500	.15000	.12500	.10000	.07500	.05000	.02500	.00000																										
17.0	68229	67107	65987	64867	63747	62627	61507	60387	59267	58147	57027	55907	54787	53667	52547	51427	50307	49187	48067	46947	45827	44707	43587	42467	41347	40227	39107	37987	36867	35747	34627	33507	32387	31267	30147	29027	27907	26787	25667	24547	23427	22307	21187	20067	18947	17827	16707	15587	14467	13347	12227	11107	9987	8867	7747	6627	5507	4387	3267	2147	1027	0000					
17.5	68529	67407	66287	65167	64047	62927	61807	60687	59567	58447	57327	56207	55087	53967	52847	51727	50607	49487	48367	47247	46127	45007	43887	42767	41647	40527	39407	38287	37167	36047	34927	33807	32687	31567	30447	29327	28207	27087	25967	24847	23727	22607	21487	20367	19247	18127	17007	15887	14767	13647	12527	11407	10287	9167	8047	6927	5807	4687	3567	2447	1327	0207	0000				
18.0	68829	67707	66587	65467	64347	63227	62107	60987	59867	58747	57627	56507	55387	54267	53147	52027	50907	49787	48667	47547	46427	45307	44187	43067	41947	40827	39707	38587	37467	36347	35227	34107	32987	31867	30747	29627	28507	27387	26267	25147	24027	22907	21787	20667	19547	18427	17307	16187	15067	13947	12827	11707	10587	9467	8347	7227	6107	4987	3867	2747	1627	0507	0000				
18.5	69129	68007	66887	65767	64647	63527	62407	61287	60167	59047	57927	56807	55687	54567	53447	52327	51207	50087	48967	47847	46727	45607	44487	43367	42247	41127	40007	38887	37767	36647	35527	34407	33287	32167	31047	29927	28807	27687	26567	25447	24327	23207	22087	20967	19847	18727	17607	16487	15367	14247	13127	12007	10887	9767	8647	7527	6407	5287	4167	3047	1927	0807	0000				
19.0	69429	68307	67187	66067	64947	63827	62707	61587	60467	59347	58227	57107	55987	54867	53747	52627	51507	50387	49267	48147	47027	45907	44787	43667	42547	41427	40307	39187	38067	36947	35827	34707	33587	32467	31347	30227	29107	27987	26867	25747	24627	23507	22387	21267	20147	19027	17907	16787	15667	14547	13427	12307	11187	10067	8947	7827	6707	5587	4467	3347	2227	1107	0000				
19.5	69729	68607	67487	66367	65247	64127	63007	61887	60767	59647	58527	57407	56287	55167	54047	52927	51807	50687	49567	48447	47327	46207	45087	43967	42847	41727	40607	39487	38367	37247	36127	35007	33887	32767	31647	30527	29407	28287	27167	26047	24927	23807	22687	21567	20447	19327	18207	17087	15967	14847	13727	12607	11487	10367	9247	8127	7007	5887	4767	3647	2527	1407	0287	0000			
20.0	70029	68907	67787	66667	65547	64427	63307	62187	61067	59947	58827	57707	56587	55467	54347	53227	52107	50987	49867	48747	47627	46507	45387	44267	43147	42027	40907	39787	38667	37547	36427	35307	34187	33067	31947	30827	29707	28587	27467	26347	25227	24107	22987	21867	20747	19627	18507	17387	16267	15147	14027	12907	11787	10667	9547	8427	7307	6187	5067	3947	2827	1707	0587	0000			
20.5	70329	69207	68087	66967	65847	64727	63607	62487	61367	60247	59127	58007	56887	55767	54647	53527	52407	51287	50167	49047	47927	46807	45687	44567	43447	42327	41207	40087	38967	37847	36727	35607	34487	33367	32247	31127	30007	28887	27767	26647	25527	24407	23287	22167	21047	19927	18807	17687	16567	15447	14327	13207	12087	10967	9847	8727	7607	6487	5367	4247	3127	2007	0887	0000			
21.0	70629	69507	68387	67267	66147	65027	63907	62787	61667	60547	59427	58307	57187	56067	54947	53827	52707	51587	50467	49347	48227	47107	45987	44867	43747	42627	41507	40387	39267	38147	37027	35907	34787	33667	32547	31427	30307	29187	28067	26947	25827	24707	23587	22467	21347	20227	19107	17987	16867	15747	14627	13507	12387	11267	10147	9027	7907	6787	5667	4547	3427	2307	1187	0067	0000		
21.5	70929	69807	68687	67567	66447	65327	64207	63087	61967	60847	59727	58607	57487	56367	55247	54127	53007	51887	50767	49647	48527	47407	46287	45167	44047	42927	41807	40687	39567	38447	37327	36207	35087	33967	32847	31727	30607	29487	28367	27247	26127	25007	23887	22767	21647	20527	19407	18287	17167	16047	14927	13807	12687	11567	10447	9327	8207	7087	5967	4847	3727	2607	1487	0367	0000		
22.0	71229	70107	68987	67867	66747	65627	64507	63387	62267	61147	60027	58907	57787	56667	55547	54427	53307	52187	51067	49947	48827	47707	46587	45467	44347	43227	42107	40987	39867	38747	37627	36507	35387	34267	33147	32027	30907	29787	28667	27547	26427	25307	24187	23067	21947	20827	19707	18587	17467	16347	15227	14107	12987	11867	10747	9627	8507	7387	6267	5147	4027	2907	1787	0667	0000		
22.5	71529	70407	69287	68167	67047	65927	64807	63687	62567	61447	60327	59207	58087	56967	55847	54727	53607	52487	51367	50247	49127	48007	46887	45767	44647	43527	42407	41287	40167	39047	37927	36807	35687	34567	33447	32327	31207	30087	28967	27847	26727	25607	24487	23367	22247	21127	20007	18887	17767	16647	15527	14407	13287	12167	11047	9927	8807	7687	6567	5447	4327	3207	2087	0967	0000		
23.0	71829	70707	69587	68467	67347	66227	65107	63987	62867	61747	60627	59507	58387	57267	56147	55027	53907	52787	51667	50547	49427	48307	47187	46067	44947	43827	42707	41587	40467	39347	38227	37107	35987	34867	33747	32627	31507	30387	29267	28147	27027	25907	24787	23667	22547	21427	20307	19187	18067	16947	15827	14707	13587	12467	11347	10227	9107	7987	6867	5747	4627	3507	2387	1267	0147	0000	
23.5	72129	71007	69887	68767	67647	66527	65407	64287	63167	62047	60927	59807	58687	57567	56447	55327	54207	53087	51967	50847	49727	48607	47487	46367	45247	44127	43007	41887	40767	39647	38527	37407	36287	35167	34047	32927	31807	30687	29567	28447	27327	26207	25087	23967	22847	21727	20607	19487	18367	17247	16127	15007	13887	12767	11647	10527	9407	8287	7167	6047	4927	3807	2687	1567	0447	0000	
24.0	72429	71307	70187	69067	67947	66827	65707	64587	63467	62347	61227	60107	58987	57867	56747	55627	54507	53387	52267	51147	50027	48907	47787	46667	45547	44427	43307	42187	41067	39947	38827	37707	36587	35467	34347	33227	32107	30987	29867	28747	27627	26507	25387	24267	23147	22027	20907	19787	18667	17547	16427	15307	14187	13067	11947	10827	9707	8587	7467	6347	5227	4107	2987	1867	0747	0000	
24.5	72729	71607	70487	69367	68247	67127	66007	64887	63767	62647	61527	60407	59287	58167	57047	55927	54807	53687	52567	51447	50327	49207	48087	46967	45847	44727	43607	42487	41367	40247	39127	38007	36887	35767	34647	33527	32407	31287	30167	29047	27927	26807	25687	24567	23447	22327	21207	20087	18967	17847	16727	15607	14487	13367	12247	11127	10007	8887	7767	6647	5527	4407	3287	2167	1047	0000	
25.0	73029	71907	70787	69667	68547	67427	66307	65187	64067	62947	61827	60707	59587	58467	57347	56227	55107	53987	52867	51747	50627	49507	48387	47267	46147	45027	43907	42787	41667	40547	39427	38307	37187	36067	34947	33827	32707	31587	30467	29347	28227	27107	25987	24867	23747	22627	21507	20387	19267	18147	17027	15907	14787	13667	12547	11427	10307	9187	8067	6947	5827	4707	3587	2467	1347	0227	0000
25.5	73329	72207	71087	69967	68847	67727	66607	65487	64367	63247	62127	61007	59887	58767	57647	56527	55407	54287	53167	52047	50927	49807	48687	47567	46447	45327	44207	43087	41967	40847	39727	38607	37487	36367	35247	34127	33007	31887	30767	29647	28527	27407	26287	25167	24047	22927	21807	20687	19567	18447	17327	16207	15087	13967	12847	11727	10607	9487	8367	7247	6127	5007	3887	2767	1647	0527	0000
26.0	73629	72507	71387	70267	69147	68027	66907	65787	64667	63547	62																																																								

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440

Percentage Points of the χ^2 Distribution

257707	257708	257709	257710	257711	257712	257713	257714	257715	257716	257717	257718	257719	257720	257721	257722	257723	257724	257725	257726	257727	257728	257729	257730	257731	257732	257733	257734	257735	257736	257737	257738	257739	257740	257741	257742	257743	257744	257745	257746	257747	257748	257749	257750	257751	257752	257753	257754	257755	257756	257757	257758	257759	257760	257761	257762	257763	257764	257765	257766	257767	257768	257769	257770	257771	257772	257773	257774	257775	257776	257777	257778	257779	257780	257781	257782	257783	257784	257785	257786	257787	257788	257789	257790	257791	257792	257793	257794	257795	257796	257797	257798	257799	258000	258001	258002	258003	258004	258005	258006	258007	258008	258009	258010	258011	258012	258013	258014	258015	258016	258017	258018	258019	258020	258021	258022	258023	258024	258025	258026	258027	258028	258029	258030	258031	258032	258033	258034	258035	258036	258037	258038	258039	258040	258041	258042	258043	258044	258045	258046	258047	258048	258049	258050	258051	258052	258053	258054	258055	258056	258057	258058	258059	258060	258061	258062	258063	258064	258065	258066	258067	258068	258069	258070	258071	258072	258073	258074	258075	258076	258077	258078	258079	258080	258081	258082	258083	258084	258085	258086	258087	258088	258089	258090	258091	258092	258093	258094	258095	258096	258097	258098	258099	258100	258101	258102	258103	258104	258105	258106	258107	258108	258109	258110	258111	258112	258113	258114	258115	258116	258117	258118	258119	258120	258121	258122	258123	258124	258125	258126	258127	258128	258129	258130	258131	258132	258133	258134	258135	258136	258137	258138	258139	258140	258141	258142	258143	258144	258145	258146	258147	258148	258149	258150	258151	258152	258153	258154	258155	258156	258157	258158	258159	258160	258161	258162	258163	258164	258165	258166	258167	258168	258169	258170	258171	258172	258173	258174	258175	258176	258177	258178	258179	258180	258181	258182	258183	258184	258185	258186	258187	258188	258189	258190	258191	258192	258193	258194	258195	258196	258197	258198	258199	258200	258201	258202	258203	258204	258205	258206	258207	258208	258209	258210	258211	258212	258213	258214	258215	258216	258217	258218	258219	258220	258221	258222	258223	258224	258225	258226	258227	258228	258229	258230	258231	258232	258233	258234	258235	258236	258237	258238	258239	258240	258241	258242	258243	258244	258245	258246	258247	258248	258249	258250	258251	258252	258253	258254	258255	258256	258257	258258	258259	258260	258261	258262	258263	258264	258265	258266	258267	258268	258269	258270	258271	258272	258273	258274	258275	258276	258277	258278	258279	258280	258281	258282	258283	258284	258285	258286	258287	258288	258289	258290	258291	258292	258293	258294	258295	258296	258297	258298	258299	258300	258301	258302	258303	258304	258305	258306	258307	258308	258309	258310	258311	258312	258313	258314	258315	258316	258317	258318	258319	258320	258321	258322	258323	258324	258325	258326	258327	258328	258329	258330	258331	258332	258333	258334	258335	258336	258337	258338	258339	258340	258341	258342	258343	258344	258345	258346	258347	258348	258349	258350	258351	258352	258353	258354	258355	258356	258357	258358	258359	258360	258361	258362	258363	258364	258365	258366	258367	258368	258369	258370	258371	258372	258373	258374	258375	258376	258377	258378	258379	258380	258381	258382	258383	258384	258385	258386	258387	258388	258389	258390	258391	258392	258393	258394	258395	258396	258397	258398	258399	258400	258401	258402	258403	258404	258405	258406	258407	258408	258409	258410	258411	258412	258413	258414	258415	258416	258417	258418	258419	258420	258421	258422	258423	258424	258425	258426	258427	258428	258429	258430	258431	258432	258433	258434	258435	258436	258437	258438	258439	258440	258441	258442	258443	258444	258445	258446	258447	258448	258449	258450	258451	258452	258453	258454	258455	258456	258457	258458	258459	258460	258461	258462	258463	258464	258465	258466	258467	258468	258469	258470	258471	258472	258473	258474	258475	258476	258477	258478	258479	258480	258481	258482	258483	258484	258485	258486	258487	258488	258489	258490	258491	258492	258493	258494	258495	258496	258497	258498	258499	258500	258501	258502	258503	258504	258505	258506	258507	258508	258509	258510	258511	258512	258513	258514	258515	258516	258517	258518	258519	258520	258521	258522	258523	258524	258525	258526	258527	258528	258529	258530	258531	258532	258533	258534	258535	258536	258537	258538	258539	258540	258541	258542	258543	258544	258545	258546	258547	258548	258549	258550	258551	258552	258553	258554	258555	258556	258557	258558	258559	258560	258561	258562	258563	258564	258565	258566	258567	258568	258569	258570	258571	258572	258573	258574	258575	258576	258577	258578	258579	258580	258581	258582	258583	258584	258585	258586	258587	258588	258589	258590	258591	258592	258593	258594	258595	258596	258597	258598	258599	258600	258601	258602	258603	258604	258605	258606	258607	258608	258609	258610	258611	258612	258613	258614	258615	258616	258617	258618	258619	258620	258621	258622	258623	258624	258625	258626	258627	258628	258629	258630	258631	258632	258633	258634	258635	258636	258637	258638	258639	258640	258641	258642	258643	258644	258645	258646	258647	258648	258649	258650	258651	258652	258653	258654	258655	258656	258657	258658	258659	258660	258661	258662	258663	258664	258665	258666	258667	258668	258669	258670	258671	258672	258673	258674	258675	258676	258677	258678	258679	258680	258681	258682	258683	258684	258685	258686	258687	258688	258689	258690	258691	258692	258693	258694	258695	258696	258697	258698	258699	258700	258701	258702	258703	258704	258705	258706	258707	258708	258709	258710	258711	258712	258713	258714	258715	258716	258717	258718	258719	258720	258721	258722	258723	258724	258725	258726	258727	258728	258729	258730	258731	258732	258733	258734	258735	258736	258737	258738	258739	258740	258741	258742	258743	258744	258745	258746	258747	258748	258749	258750	258751	258752	258753	258754	258755	258756	258757	258758	258759	258760	258761	258762	258763	258764	258765	258766	258767	258768	258769	258770	258771	258772	258773	258774	258775	258776	258777	258778	258779	258780	258781	258782	258783	258784	258785	258786	258787	258788	258789	258790	258791	258792	258793	258794	258795	258796	258797	258798	258799	258800	258801	258802	258803	258804	258805	258806	258807	258808	258809	258810	258811	258812	258813	258814	258815	258816	258817	258818	258819	258820	258821	258822	258823	258824	258825	258826	258827	258828	258829	258830	258831	258832	258833	258834	258835	258836	258837	258838	258839	258840	258841	258842	258843	258844	258845	258846	258847	258848	258849	258850	258851	258852	258853	258854	258855	258856	258857	258858	258859	258860	258861	258862	258863	258864	258865	258866	258867	258868	258869	258870	258871	258872	258873	258874	258875	258876	258877	258878	258879	258880	258881	258882	258883	258884	258885	258886	258887	258888	258889	258890	258891	258892	258893	258894	258895	258896	258897	258898	258899	258900	258901	258902	258903	258904	258905	258906	258907	258908	258909	258910	258911	258912	258913	258914	258915	258916	258917	258918	258919	258920	258921	258922	258923	258924	258925	258926	258927	258928	258929	258930	258931	258932	258933	258934	258935	258936	258937	258938	258939	258940	258941	258942	258943	258944	258945	258946	258947	258948	258949	258950	258951	258952	258953	258954	258955	258956	258957	258958	258959	258960	258961	258962	258963	258964	258965	258966	258967	258968	258969	258970	258971	258972	258973	258974	258975	258976	258977	258978	258979	258980	258981	258982	258983	258984	258985	258986	258987	258988	258989	258990	258991	258992	258993	258994	258995	258996	258997	258998	258999	259000	259001	259002	259003	259004	259005	259006	259007	259008	259009	259010	259011	259012	259013	259014	259015	259016	259017	259018	259019	259020	259021	259022	259023	259024	259025	259026	259027	259028	259029	259030	259031	259
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a part of the same of which I have sent you
herewith a copy - I will be glad to afford you

[illegible]

Q

44

Percentage Points of the χ^2 -Distribution Values of χ^2 in Terms of Q and ν

[illegible]

[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.995000	.997500	.998000	.997500	.995000	.970000	.955000	.960000	.955000	.950000	.950000
122.5	.123522 03	.123793 03	.123880 03	.123793 03	.123522 03	.129097 03	.130324 03	.132357 03	.133228 03	.134027 03	.950000
123.0	.123597 03	.123867 03	.123954 03	.123867 03	.123597 03	.129143 03	.130370 03	.132800 03	.133680 03	.134481 03	.134027 03
123.5	.123672 03	.123941 03	.124028 03	.123941 03	.123672 03	.129189 03	.130416 03	.132846 03	.133726 03	.134527 03	.134027 03
124.0	.123747 03	.124016 03	.124103 03	.124016 03	.123747 03	.129235 03	.130462 03	.132892 03	.133772 03	.134573 03	.134027 03
124.5	.123822 03	.124091 03	.124178 03	.124091 03	.123822 03	.129281 03	.130508 03	.132938 03	.133818 03	.134619 03	.134027 03
125.0	.123897 03	.124170 03	.124257 03	.124170 03	.123897 03	.129327 03	.130554 03	.132984 03	.133864 03	.134665 03	.134027 03
125.5	.123972 03	.124245 03	.124332 03	.124245 03	.123972 03	.129373 03	.130600 03	.133030 03	.133910 03	.134711 03	.134027 03
126.0	.124047 03	.124320 03	.124407 03	.124320 03	.124047 03	.129419 03	.130646 03	.133076 03	.133956 03	.134757 03	.134027 03
126.5	.124122 03	.124395 03	.124482 03	.124395 03	.124122 03	.129465 03	.130692 03	.133122 03	.134002 03	.134803 03	.134027 03
127.0	.124197 03	.124470 03	.124557 03	.124470 03	.124197 03	.129511 03	.130738 03	.133168 03	.134048 03	.134849 03	.134027 03
127.5	.124272 03	.124545 03	.124632 03	.124545 03	.124272 03	.129557 03	.130784 03	.133214 03	.134094 03	.134895 03	.134027 03
128.0	.124347 03	.124620 03	.124707 03	.124620 03	.124347 03	.129603 03	.130830 03	.133260 03	.134140 03	.134941 03	.134027 03
128.5	.124422 03	.124695 03	.124782 03	.124695 03	.124422 03	.129649 03	.130876 03	.133306 03	.134186 03	.134987 03	.134027 03
129.0	.124497 03	.124770 03	.124857 03	.124770 03	.124497 03	.129695 03	.130922 03	.133352 03	.134232 03	.135033 03	.134027 03
129.5	.124572 03	.124845 03	.124932 03	.124845 03	.124572 03	.129741 03	.130968 03	.133398 03	.134278 03	.135079 03	.134027 03
130.0	.124647 03	.124920 03	.125007 03	.124920 03	.124647 03	.129787 03	.131014 03	.133444 03	.134324 03	.135125 03	.134027 03
130.5	.124722 03	.124995 03	.125082 03	.124995 03	.124722 03	.129833 03	.131060 03	.133490 03	.134370 03	.135171 03	.134027 03
131.0	.124797 03	.125070 03	.125157 03	.125070 03	.124797 03	.129879 03	.131106 03	.133536 03	.134416 03	.135217 03	.134027 03
131.5	.124872 03	.125145 03	.125232 03	.125145 03	.124872 03	.129925 03	.131152 03	.133582 03	.134462 03	.135263 03	.134027 03
132.0	.124947 03	.125220 03	.125307 03	.125220 03	.124947 03	.129971 03	.131198 03	.133628 03	.134508 03	.135309 03	.134027 03
132.5	.125022 03	.125295 03	.125382 03	.125295 03	.125022 03	.129997 03	.131244 03	.133674 03	.134554 03	.135355 03	.134027 03
133.0	.125097 03	.125370 03	.125457 03	.125370 03	.125097 03	.130043 03	.131290 03	.133720 03	.134600 03	.135401 03	.134027 03
133.5	.125172 03	.125445 03	.125532 03	.125445 03	.125172 03	.130089 03	.131336 03	.133766 03	.134646 03	.135447 03	.134027 03
134.0	.125247 03	.125520 03	.125607 03	.125520 03	.125247 03	.130135 03	.131382 03	.133812 03	.134692 03	.135493 03	.134027 03
134.5	.125322 03	.125595 03	.125682 03	.125595 03	.125322 03	.130181 03	.131428 03	.133858 03	.134738 03	.135539 03	.134027 03
135.0	.125397 03	.125670 03	.125757 03	.125670 03	.125397 03	.130227 03	.131474 03	.133904 03	.134784 03	.135585 03	.134027 03
135.5	.125472 03	.125745 03	.125832 03	.125745 03	.125472 03	.130273 03	.131520 03	.133950 03	.134830 03	.135631 03	.134027 03
136.0	.125547 03	.125820 03	.125907 03	.125820 03	.125547 03	.130319 03	.131566 03	.134000 03	.134876 03	.135677 03	.134027 03
136.5	.125622 03	.125895 03	.125982 03	.125895 03	.125622 03	.130365 03	.131612 03	.134046 03	.134922 03	.135723 03	.134027 03
137.0	.125697 03	.125970 03	.126057 03	.125970 03	.125697 03	.130411 03	.131658 03	.134092 03	.134968 03	.135769 03	.134027 03
137.5	.125772 03	.126045 03	.126132 03	.126045 03	.125772 03	.130457 03	.131704 03	.134138 03	.135014 03	.135815 03	.134027 03
138.0	.125847 03	.126120 03	.126207 03	.126120 03	.125847 03	.130503 03	.131750 03	.134184 03	.135060 03	.135861 03	.134027 03
138.5	.125922 03	.126195 03	.126282 03	.126195 03	.125922 03	.130549 03	.131796 03	.134230 03	.135106 03	.135907 03	.134027 03
139.0	.125997 03	.126270 03	.126357 03	.126270 03	.125997 03	.130595 03	.131842 03	.134276 03	.135152 03	.135953 03	.134027 03
139.5	.126072 03	.126345 03	.126432 03	.126345 03	.126072 03	.130641 03	.131888 03	.134322 03	.135198 03	.136000 03	.134027 03
140.0	.126147 03	.126420 03	.126507 03	.126420 03	.126147 03	.130687 03	.131934 03	.134368 03	.135244 03	.136046 03	.134027 03
140.5	.126222 03	.126495 03	.126582 03	.126495 03	.126222 03	.130733 03	.131980 03	.134414 03	.135290 03	.136092 03	.134027 03
141.0	.126297 03	.126570 03	.126657 03	.126570 03	.126297 03	.130779 03	.132026 03	.134460 03	.135336 03	.136138 03	.134027 03
141.5	.126372 03	.126645 03	.126732 03	.126645 03	.126372 03	.130825 03	.132072 03	.134506 03	.135382 03	.136184 03	.134027 03
142.0	.126447 03	.126720 03	.126807 03	.126720 03	.126447 03	.130871 03	.132118 03	.134552 03	.135428 03	.136230 03	.134027 03
142.5	.126522 03	.126795 03	.126882 03	.126795 03	.126522 03	.130917 03	.132164 03	.134598 03	.135474 03	.136276 03	.134027 03
143.0	.126597 03	.126870 03	.126957 03	.126870 03	.126597 03	.130963 03	.132210 03	.134644 03	.135520 03	.136322 03	.134027 03
143.5	.126672 03	.126945 03	.127032 03	.126945 03	.126672 03	.131009 03	.132256 03	.134690 03	.135566 03	.136368 03	.134027 03
144.0	.126747 03	.127020 03	.127107 03	.127020 03	.126747 03	.131055 03	.132302 03	.134736 03	.135612 03	.136414 03	.134027 03
144.5	.126822 03	.127095 03	.127182 03	.127095 03	.126822 03	.131101 03	.132348 03	.134782 03	.135658 03	.136460 03	.134027 03
145.0	.126897 03	.127170 03	.127257 03	.127170 03	.126897 03	.131147 03	.132394 03	.134828 03	.135704 03	.136506 03	.134027 03
145.5	.126972 03	.127245 03	.127332 03	.127245 03	.126972 03	.131193 03	.132440 03	.134874 03	.135750 03	.136552 03	.134027 03
146.0	.127047 03	.127320 03	.127407 03	.127320 03	.127047 03	.131239 03	.132486 03	.134920 03	.135796 03	.136598 03	.134027 03
146.5	.127122 03	.127395 03	.127482 03	.127395 03	.127122 03	.131285 03	.132532 03	.134966 03	.135842 03	.136644 03	.134027 03
147.0	.127197 03	.127470 03	.127557 03	.127470 03	.127197 03	.131331 03	.132578 03	.135012 03	.135888 03	.136690 03	.134027 03
147.5	.127272 03	.127545 03	.127632 03	.127545 03	.127272 03	.131377 03	.132624 03	.135058 03	.135934 03	.136736 03	.134027 03
148.0	.127347 03	.127620 03	.127707 03	.127620 03	.127347 03	.131423 03	.132670 03	.135104 03	.135980 03	.136782 03	.134027 03
148.5	.127422 03	.127695 03	.127782 03	.127695 03	.127422 03	.131469 03	.132716 03	.135150 03	.136026 03	.136828 03	.134027 03
149.0	.127497 03	.127770 03	.127857 03	.127770 03	.127497 03	.131515 03	.132762 03	.135196 03	.136072 03	.136874 03	.134027 03
149.5	.127572 03	.127845 03	.127932 03	.127845 03	.127572 03	.131561 03	.132808 03	.135242 03	.136118 03	.136920 03	.134027 03
150.0	.127647 03	.127920 03	.128007 03	.127920 03	.127647 03	.131607 03	.132854 03	.135288 03	.136164 03	.136966 03	.134027 03
150.5	.127722 03	.128000 03	.128087 03	.128000 03	.127722 03	.131653 03	.132900 03	.135334 03	.136210 03	.137012 03	.134027 03
151.0	.127797 03	.128075 03	.128162 03	.128075 03	.127797 03	.131699 03	.132946 03	.135380 03	.136256 03	.137058 03	.134027 03
151.5	.127872 03	.128150 03	.128237 03	.128150 03	.127872 03	.131745 03	.132992 03	.135426 03	.136302 03	.137104 03	.134027 03
152.0	.127947 03	.128225 03	.128312 03	.128225 03	.127947 03	.131791 03	.133038 03	.135472 03	.136348 03	.137150 03	.134027 03
152.5	.128022 03	.128300 03	.128387 03	.128300 03	.128022 03	.131837 03	.133084 03	.135518 03	.136394 03	.137196 03	.134027 03
153.0	.128097 03	.128375 03	.128462 03	.128375 03	.128097 03	.131883 03	.133130 03	.135564 03	.136440 03	.137242 03	.134027 03
153.5	.128172 03	.128450 03	.128537 03	.128450 03	.128172 03	.131929 03	.133176 03	.135610 03	.136486 03	.137288 03	.134027 03
154.0	.128247 03	.128525 03	.128612 03	.128525 03	.128247 03	.131975 03	.133222 03	.135656 03	.136532 03	.137334 03	.134027 03
154.5	.128322 03	.128600 03	.128687 03	.128600 03	.128322 03	.132021 03	.133268 03	.135702 03	.136578 03	.137380 03	.134027 03
155.0	.128397 03	.128675 03	.128762 03	.128675 03	.128397 03	.132067 03	.133314 03	.135748 03	.136624 03	.137426 03	.134027 03
155.5	.128472 03	.128750 03	.128837 03	.128750 03	.128472 03	.132113 03	.133360 03	.135794 03	.136670 03	.137472 03	.134027 03
156.0	.128547 03	.128825 03	.128912 03	.128825 03	.128547 03	.132159 03	.133406 03	.135840 03	.136716 03	.137518 03	.134027 03
156.5	.128622 03	.128900 03	.128987 03	.128900 03	.128622 03	.132205 03	.133452 03	.135886 03	.136762 03	.137564 03	.134027 03
157.0	.128697 03	.128975 03	.129062 03	.128975 03	.128697 03	.132251 03	.133498 03	.135932 03	.136808 03	.137610 03	.134027 03
157.5	.128772 03	.129050 03	.129137 03	.129050 03	.128772 03	.132297 03	.133544 03	.135978 03	.136854 03	.137656 03	.134027 03
158.0	.128847 03	.129125 03	.129212 03	.129125 03							

187.0	145612	146811	147375	149066	151474	152866	153972	155013	155958	156414	156870	157326	157783	158239	158696	159152	159609	160066	160522	160979	161436	161893	162350	162807	163264	163721	164178	164635	165093	165550	166007	166464	166922	167380	167837	168295	168753	169210	169668	170126	170584	171042	171500	171958	172416	172874	173333	173791	174249	174708	175166	175624	176083	176541	176999	177458	177917	178376	178835	179294	179753	180212	180671	181130	181589	182048	182507	182966	183425	183884	184343	184802	185261	185720	186179	186638	187097	187556	188015	188474	188933	189392	189851	190310	190769	191228	191687	192146	192605	193064	193523	193982	194441	194900	195359	195818	196277	196736	197195	197654	198113	198572	199031	199490	199949	200408	200867	201326	201785	202244	202703	203162	203621	204080	204539	204998	205457	205916	206375	206834	207293	207752	208211	208670	209129	209588	210047	210506	210965	211424	211883	212342	212801	213260	213719	214178	214637	215096	215555	216014	216473	216932	217391	217850	218309	218768	219227	219686	220145	220604	221063	221522	221981	222440	222899	223358	223817	224276	224735	225194	225653	226112	226571	227030	227489	227948	228407	228866	229325	229784	230243	230702	231161	231620	232079	232538	232997	233456	233915	234374	234833	235292	235751	236210	236669	237128	237587	238046	238505	238964	239423	239882	240341	240800	241259	241718	242177	242636	243095	243554	244013	244472	244931	245390	245849	246308	246767	247226	247685	248144	248603	249062	249521	249980	250439	250898	251357	251816	252275	252734	253193	253652	254111	254570	255029	255488	255947	256406	256865	257324	257783	258242	258701	259160	259619	260078	260537	260996	261455	261914	262373	262832	263291	263750	264209	264668	265127	265586	266045	266504	266963	267422	267881	268340	268799	269258	269717	270176	270635	271094	271553	272012	272471	272930	273389	273848	274307	274766	275225	275684	276143	276602	277061	277520	277979	278438	278897	279356	279815	280274	280733	281192	281651	282110	282569	283028	283487	283946	284405	284864	285323	285782	286241	286700	287159	287618	288077	288536	288995	289454	289913	290372	290831	291290	291749	292208	292667	293126	293585	294044	294503	294962	295421	295880	296339	296798	297257	297716	298175	298634	299093	299552	300011	300470	300929	301388	301847	302306	302765	303224	303683	304142	304601	305060	305519	305978	306437	306896	307355	307814	308273	308732	309191	309650	310109	310568	311027	311486	311945	312404	312863	313322	313781	314240	314699	315158	315617	316076	316535	316994	317453	317912	318371	318830	319289	319748	320000	320459	320918	321377	32183
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Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

	990000	980000	970000	960000	950000	940000
1	179765	178835	177822	176822	175842	174821
2	180225	179294	178279	177279	176296	175306
3	180685	179753	178737	177737	176761	175781
4	181145	180212	179194	178194	177220	176248
5	181606	180671	179652	178652	177724	176728
6	182066	181130	180110	179110	178855	178587
7	182526	181589	180567	179567	179441	179179
8	182987	182048	181025	180025	179897	179634
9	183447	182507	181483	180483	180354	179088
10	183907	182967	181941	180941	180810	179543
11	184368	183426	182399	181399	181267	180000
12	184828	183885	182857	181857	181723	180453
13	185289	184345	183315	182315	182180	180908
14	185750	184804	183773	182773	182636	181363
15	186210	185263	184231	183231	183093	181818
16	186671	185723	184690	183690	183550	182273
17	187132	186183	185148	184148	184007	182728
18	187593	186642	185606	184606	184463	183183
19	188054	187102	186065	185065	184920	183639
20	188514	187562	186523	185523	184894	184094
21	188975	188021	186981	185981	185834	184549
22	189436	188481	187440	186440	186291	185005
23	189897	188941	187898	186898	186748	185460
24	190359	189401	188357	187357	187206	185916
25	190820	189861	188816	187816	187663	186371
26	191281	190321	189274	188274	188120	186827
27	191742	190781	189733	188733	188577	187283
28	192203	191241	190192	189192	189035	187738
29	192665	191701	190651	189651	189492	188194
30	193126	192161	191109	190109	189949	188650
31	193587	192621	191568	190568	190407	189106
32	194049	193082	192027	191027	190864	189562
33	194510	193542	192486	191486	191322	190018
34	194972	194002	192945	191945	191780	190474
35	195433	194463	193404	192404	192237	190930
36	195895	194923	193864	192864	192695	191386
37	196357	195383	194323	193323	193153	191842
38	196818	195844	194782	193782	193610	192298
39	197280	196304	195241	194241	194068	192754
40	197742	196765	195700	194700	194526	193211
41	198203	197226	196160	195160	194984	193667
42	198665	197686	196619	195619	195442	194123
43	199127	198147	197079	196079	195900	194580
44	199589	198608	197538	196538	196358	195036
45	200051	199069	197998	196998	196816	195493
46	200513	199529	198457	197457	197273	195949
47	200975	199990	198917	197917	197733	196406
48	201437	200451	199376	198376	198191	196863
49	201899	200912	199836	198836	198649	197319
50	202362	201373	200296	199296	199107	197776

Percentage Points of the χ^2 Distribution

1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000
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54

[illegible]

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and r

214623	214624	214625	214626	214627	214628	214629	214630	214631	214632	214633	214634	214635	214636	214637	214638	214639	214640	214641	214642	214643	214644	214645	214646	214647	214648	214649	214650	214651	214652	214653	214654	214655	214656	214657	214658	214659	214660	214661	214662	214663	214664	214665	214666	214667	214668	214669	214670	214671	214672	214673	214674	214675	214676	214677	214678	214679	214680	214681	214682	214683	214684	214685	214686	214687	214688	214689	214690	214691	214692	214693	214694	214695	214696	214697	214698	214699	214700	214701	214702	214703	214704	214705	214706	214707	214708	214709	214710	214711	214712	214713	214714	214715	214716	214717	214718	214719	214720	214721	214722	214723	214724	214725	214726	214727	214728	214729	214730	214731	214732	214733	214734	214735	214736	214737	214738	214739	214740	214741	214742	214743	214744	214745	214746	214747	214748	214749	214750	214751	214752	214753	214754	214755	214756	214757	214758	214759	214760	214761	214762	214763	214764	214765	214766	214767	214768	214769	214770	214771	214772	214773	214774	214775	214776	214777	214778	214779	214780	214781	214782	214783	214784	214785	214786	214787	214788	214789	214790	214791	214792	214793	214794	214795	214796	214797	214798	214799	214800	214801	214802	214803	214804	214805	214806	214807	214808	214809	214810	214811	214812	214813	214814	214815	214816	214817	214818	214819	214820	214821	214822	214823	214824	214825	214826	214827	214828	214829	214830	214831	214832	214833	214834	214835	214836	214837	214838	214839	214840	214841	214842	214843	214844	214845	214846	214847	214848	214849	214850	214851	214852	214853	214854	214855	214856	214857	214858	214859	214860	214861	214862	214863	214864	214865	214866	214867	214868	214869	214870	214871	214872	214873	214874	214875	214876	214877	214878	214879	214880	214881	214882	214883	214884	214885	214886	214887	214888	214889	214890	214891	214892	214893	214894	214895	214896	214897	214898	214899	214900	214901	214902	214903	214904	214905	214906	214907	214908	214909	214910	214911	214912	214913	214914	214915	214916	214917	214918	214919	214920	214921	214922	214923	214924	214925	214926	214927	214928	214929	214930	214931	214932	214933	214934	214935	214936	214937	214938	214939	214940	214941	214942	214943	214944	214945	214946	214947	214948	214949	214950	214951	214952	214953	214954	214955	214956	214957	214958	214959	214960	214961	214962	214963	214964	214965	214966	214967	214968	214969	214970	214971	214972	214973	214974	214975	214976	214977	214978	214979	214980	214981	214982	214983	214984	214985	214986	214987	214988	214989	214990	214991	214992	214993	214994	214995	214996	214997	214998	214999	215000
214957	214958	214959	214960	214961	214962	214963	214964	214965	214966	214967	214968	214969	214970	214971	214972	214973	214974	214975	214976	214977	214978	214979	214980	214981	214982	214983	214984	214985	214986	214987	214988	214989	214990	214991	214992	214993	214994	214995	214996	214997	214998	214999	215000	215001	215002	215003	215004	215005	215006	215007	215008	215009	215010	215011	215012	215013	215014	215015	215016	215017	215018	215019	215020	215021	215022	215023	215024	215025	215026	215027	215028	215029	215030	215031	215032	215033	215034	215035	215036	215037	215038	215039	215040	215041	215042	215043	215044	215045	215046	215047	215048	215049	215050	215051	215052	215053	215054	215055	215056	215057	215058	215059	215060	215061	215062	215063	215064	215065	215066	215067	215068	215069	215070	215071	215072	215073	215074	215075	215076	215077	215078	215079	215080	215081	215082	215083	215084	215085	215086	215087	215088	215089	215090	215091	215092	215093	215094	215095	215096	215097	215098	215099	215100	215101	215102	215103	215104	215105	215106	215107	215108	215109	215110	215111	215112	215113	215114	215115	215116	215117	215118	215119	215120	215121	215122	215123	215124	215125	215126	215127	215128	215129	215130	215131	215132	215133	215134	215135	215136	215137	215138	215139	215140	215141	215142	215143	215144	215145	215146	215147	215148	215149	215150	215151	215152	215153	215154	215155	215156	215157	215158	215159	215160	215161	215162	215163	215164	215165	215166	215167	215168	215169	215170	215171	215172	215173	215174	215175	215176	215177	215178	215179	215180	215181	215182	215183	215184	215185	215186	215187	215188	215189	215190	215191	215192	215193	215194	215195	215196	215197	215198	215199	215200																																																																																																																																						
215157	215158	215159	215160	215161	215162	215163	215164	215165	215166	215167	215168	215169	215170	215171	215172	215173	215174	215175	215176	215177	215178	215179	215180	215181	215182	215183	215184	215185	215186	215187	215188	215189	215190	215191	215192	215193	215194	215195	215196	215197	215198	215199	215200	215201	215202	215203	215204	215205	215206	215207	215208	215209	215210	215211	215212	215213	215214	215215	215216	215217	215218	215219	215220	215221	215222	215223	215224	215225	215226	215227	215228	215229	215230	215231	215232	215233	215234	215235	215236	215237	215238	215239	215240	215241	215242	215243	215244	215245	215246	215247	215248	215249	215250	215251	215252	215253	215254	215255	215256	215257	215258	215259	215260	215261	215262	215263	215264	215265	215266	215267	215268	215269	215270	215271	215272	215273	215274	215275	215276	215277	215278	215279	215280	215281	215282	215283	215284	215285	215286	215287	215288	215289	215290	215291	215292	215293	215294	215295	215296	215297	215298	215299	215300	215301	215302	215303	215304	215305	215306	215307	215308	215309	215310	215311	215312	215313	215314	215315	215316	215317	215318	215319	215320	215321	215322	215323	215324	215325	215326	215327	215328	215329	215330	215331	215332	215333	215334	215335	215336	215337	215338	215339	215340	215341	215342	215343	215344	215345	215346	215347	215348	215349	215350	215351	215352	215353	215354	215355	215356	215357	215358	215359	215360	215361	215362	215363	215364	215365	215366	215367	215368	215369	215370	215371	215372	215373	215374	215375	215376	215377	215378	215379	215380	215381	215382	215383	215384	215385	215386	215387	215388	215389	215390	215391	215392	215393	215394	215395	215396	215397	215398	215399	215400	215401	215402	215403	215404	215405	215406	215407	215408	215409	215410	215411	215412	215413	215414	215415	215416	215417	215418	215419	215420	215421	215422	215423	215424	215425	215426	215427	215428	215429	215430	215431	215432	215433	215434	215435	215436	215437	215438	215439	215440	215441	215442	215443	215444	215445	215446	215447	215448	215449	215450	215451	215452	215453	215454	215455	215456	215457	215458	215459	215460	215461	215462	215463	215464	215465	215466	215467	215468	215469	215470	215471	215472	215473	215474	215475	215476	215477	215478	215479	215480	215481	215482	215483	215484	215485	215486	215487	215488	215489	215490	215491	215492	215493	215494	215495	215496	215497	215498	215499	215500																																		
215457	215458	215459	215460	215461	215462	215463	215464	215465	215466	215467	215468	215469	215470	215471	215472	215473	215474	215475	215476	215477	215478	215479	215480	215481	215482	215483	215484	215485	215486	215487	215488	215489	215490	215491	215492	215493	215494	215495	215496	215497	215498	215499	215500	215501	215502	215503	215504	215505	215506	215507	215508	215509	215510	215511	215512	215513	215514	215515	215516	215517	215518	215519	215520	215521	215522	215523	215524	215525	215526	215527	215528	215529	215530	215531	215532	215533	215534	215535	215536	215537	215538	215539	215540	215541	215542	215543	215544	215545	215546	215547	215548	215549	215550	215551	215552	215553	215554	215555	215556	215557	215558	215559	215560	215561	215562	215563	215564	215565	215566	215567	215568	215569	215570	215571	215572	215573	215574	215575	215576	215577	215578	215579	215580	215581	215582	215583	215584	215585	215586	215587	215588	215589	215590	215591	215592	215593	215594	215595	215596	215597	215598	215599	215600	215601	215602	215603	215604	215605	215606	215607	215608	215609	215610	215611	215612	215613	215614	21																																																																																																																																																																																																																											

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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

Q	v	995000	997500	998500	999000	999500	999750	999900	999950	999975	999990	999995	999997	999999
317.5	28.5	28515	28517	28519	28521	28523	28525	28527	28529	28531	28533	28535	28537	28539
318.0	28.5	28542	28544	28546	28548	28550	28552	28554	28556	28558	28560	28562	28564	28566
318.5	28.5	28569	28571	28573	28575	28577	28579	28581	28583	28585	28587	28589	28591	28593
319.0	28.5	28596	28598	28600	28602	28604	28606	28608	28610	28612	28614	28616	28618	28620
319.5	28.5	28627	28629	28631	28633	28635	28637	28639	28641	28643	28645	28647	28649	28651
320.0	28.5	28658	28660	28662	28664	28666	28668	28670	28672	28674	28676	28678	28680	28682
320.5	28.5	28689	28691	28693	28695	28697	28699	28701	28703	28705	28707	28709	28711	28713
321.0	28.5	28714	28716	28718	28720	28722	28724	28726	28728	28730	28732	28734	28736	28738
321.5	28.5	28739	28741	28743	28745	28747	28749	28751	28753	28755	28757	28759	28761	28763
322.0	28.5	28764	28766	28768	28770	28772	28774	28776	28778	28780	28782	28784	28786	28788
322.5	28.5	28789	28791	28793	28795	28797	28799	28801	28803	28805	28807	28809	28811	28813
323.0	28.5	28814	28816	28818	28820	28822	28824	28826	28828	28830	28832	28834	28836	28838
323.5	28.5	28839	28841	28843	28845	28847	28849	28851	28853	28855	28857	28859	28861	28863
324.0	28.5	28864	28866	28868	28870	28872	28874	28876	28878	28880	28882	28884	28886	28888
324.5	28.5	28889	28891	28893	28895	28897	28899	28901	28903	28905	28907	28909	28911	28913
325.0	28.5	28914	28916	28918	28920	28922	28924	28926	28928	28930	28932	28934	28936	28938
325.5	28.5	28939	28941	28943	28945	28947	28949	28951	28953	28955	28957	28959	28961	28963
326.0	28.5	28964	28966	28968	28970	28972	28974	28976	28978	28980	28982	28984	28986	28988
326.5	28.5	28989	28991	28993	28995	28997	28999	29001	29003	29005	29007	29009	29011	29013
327.0	28.5	29014	29016	29018	29020	29022	29024	29026	29028	29030	29032	29034	29036	29038
327.5	28.5	29039	29041	29043	29045	29047	29049	29051	29053	29055	29057	29059	29061	29063
328.0	28.5	29064	29066	29068	29070	29072	29074	29076	29078	29080	29082	29084	29086	29088
328.5	28.5	29089	29091	29093	29095	29097	29099	29101	29103	29105	29107	29109	29111	29113
329.0	28.5	29114	29116	29118	29120	29122	29124	29126	29128	29130	29132	29134	29136	29138
329.5	28.5	29139	29141	29143	29145	29147	29149	29151	29153	29155	29157	29159	29161	29163
330.0	28.5	29164	29166	29168	29170	29172	29174	29176	29178	29180	29182	29184	29186	29188
330.5	28.5	29189	29191	29193	29195	29197	29199	29201	29203	29205	29207	29209	29211	29213
331.0	28.5	29214	29216	29218	29220	29222	29224	29226	29228	29230	29232	29234	29236	29238
331.5	28.5	29239	29241	29243	29245	29247	29249	29251	29253	29255	29257	29259	29261	29263
332.0	28.5	29264	29266	29268	29270	29272	29274	29276	29278	29280	29282	29284	29286	29288
332.5	28.5	29289	29291	29293	29295	29297	29299	29301	29303	29305	29307	29309	29311	29313
333.0	28.5	29314	29316	29318	29320	29322	29324	29326	29328	29330	29332	29334	29336	29338
333.5	28.5	29339	29341	29343	29345	29347	29349	29351	29353	29355	29357	29359	29361	29363
334.0	28.5	29364	29366	29368	29370	29372	29374	29376	29378	29380	29382	29384	29386	29388
334.5	28.5	29389	29391	29393	29395	29397	29399	29401	29403	29405	29407	29409	29411	29413
335.0	28.5	29414	29416	29418	29420	29422	29424	29426	29428	29430	29432	29434	29436	29438
335.5	28.5	29439	29441	29443	29445	29447	29449	29451	29453	29455	29457	29459	29461	29463
336.0	28.5	29464	29466	29468	29470	29472	29474	29476	29478	29480	29482	29484	29486	29488
336.5	28.5	29489	29491	29493	29495	29497	29499	29501	29503	29505	29507	29509	29511	29513
337.0	28.5	29514	29516	29518	29520	29522	29524	29526	29528	29530	29532	29534	29536	29538
337.5	28.5	29539	29541	29543	29545	29547	29549	29551	29553	29555	29557	29559	29561	29563
338.0	28.5	29564	29566	29568	29570	29572	29574	29576	29578	29580	29582	29584	29586	29588
338.5	28.5	29589	29591	29593	29595	29597	29599	29601	29603	29605	29607	29609	29611	29613
339.0	28.5	29614	29616	29618	29620	29622	29624	29626	29628	29630	29632	29634	29636	29638
339.5	28.5	29639	29641	29643	29645	29647	29649	29651	29653	29655	29657	29659	29661	29663
340.0	28.5	29664	29666	29668	29670	29672	29674	29676	29678	29680	29682	29684	29686	29688
340.5	28.5	29689	29691	29693	29695	29697	29699	29701	29703	29705	29707	29709	29711	29713
341.0	28.5	29714	29716	29718	29720	29722	29724	29726	29728	29730	29732	29734	29736	29738
341.5	28.5	29739	29741	29743	29745	29747	29749	29751	29753	29755	29757	29759	29761	29763
342.0	28.5	29764	29766	29768	29770	29772	29774	29776	29778	29780	29782	29784	29786	29788
342.5	28.5	29789	29791	29793	29795	29797	29799	29801	29803	29805	29807	29809	29811	29813
343.0	28.5	29814	29816	29818	29820	29822	29824	29826	29828	29830	29832	29834	29836	29838
343.5	28.5	29839	29841	29843	29845	29847	29849	29851	29853	29855	29857	29859	29861	29863
344.0	28.5	29864	29866	29868	29870	29872	29874	29876	29878	29880	29882	29884	29886	29888
344.5	28.5	29889	29891	29893	29895	29897	29899	29901	29903	29905	29907	29909	29911	29913
345.0	28.5	29914	29916	29918	29920	29922	29924	29926	29928	29930	29932	29934	29936	29938
345.5	28.5	29939	29941	29943	29945	29947	29949	29951	29953	29955	29957	29959	29961	29963
346.0	28.5	29964	29966	29968	29970	29972	29974	29976	29978	29980	29982	29984	29986	29988
346.5	28.5	29989	29991	29993	29995	29997	29999	30001	30003	30005	30007	30009	30011	30013
347.0	28.5	30014	30016	30018	30020	30022	30024	30026	30028	30030	30032	30034	30036	30038
347.5	28.5	30039	30041	30043	30045	30047	30049	30051	30053	30055	30057	30059	30061	30063
348.0	28.5	30064	30066	30068	30070	30072	30074	30076	30078	30080	30082	30084	30086	30088
348.5	28.5	30089	30091	30093	30095	30097	30099	30101	30103	30105	30107	30109	30111	30113
349.0	28.5	30114	30116	30118	30120	30122	30124	30126	30128	30130	30132	30134	30136	30138
349.5	28.5	30139	30141	30143	30145	30147	30149	30151	30153	30155	30157	30159	30161	30163
350.0	28.5	30164	30166	30168	30170	30172	30174	30176	30178	30180	30182	30184	30186	30188
350.5	28.5	30189	30191	30193	30195	30197	30199	30201	30203	30205	30207	30209	30211	30213
351.0	28.5	30214	30216	30218	30220	30222	30224	30226	30228	30230	30232	30234	30236	30238
351.5	28.5	30239	30241	30243	30245	30247	30249	30251	30253	30255	30257	30259	30261	30263
352.0	28.5	30264	30266	30268	30270	30272	30274	30276	30278	30280	30282	30284	30286	30288
352.5	28.5	30289	30291	30293	30295	30297	30299	30301	30303	30305	30307	30309	30311	30313
353.0	28.5	30314	30316	30318	30320	30322	30324	30326	30328	30330	30332	30334	30336	30338
353.5	28.5	30339	30341	30343	30345	30347	30349	30351	30353	30355	30357	30359	30361	30363
354.0	28.5	30364	30366	30368	30370	30372	30374	30376	30378	30380	30382	30384	30386	30388
354.5	28.5	30389	30391	30393	30395	30397	30399	30401	30403	30405	30407	30409	30411	30413
355.0	28.5	30414	30416	30418	30420	30422	30424	30426	30428	30430	30432	30434	30436	30438
355.5	28.5	30439	30441	30443	30445	30447	30449	30451	30453	30455	30457	30459	30461	30463
356.0	28.5	30464	30466	30468	30470	30472	30474	30476	30478	30480	30482	30484	30486	30488
356.5	28.5	30489	30491	30493	30495	30497	30499	30501	30					

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[illegible]

Part of the ...
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[illegible]

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.99000	.98750	.98500	.98000	.97500	.97000	.96500	.96000	.95500	.95000	.95000
412.5	348635 03	350819 03	352660 03	355677 03	358122 03	360195 03	362004 03	363618 03	365080 03	366419 03	366419 03
413.0	349094 03	351280 03	353122 03	356141 03	358588 03	360662 03	362473 03	364088 03	365550 03	366891 03	366891 03
413.5	349554 02	351741 03	353584 03	356606 03	359054 03	361129 03	362941 03	364557 03	366021 03	367362 03	367362 03
414.0	350014 03	352202 03	354047 03	357070 03	359520 03	361596 03	363410 03	365027 03	366491 03	367833 03	367833 03
414.5	350473 02	352663 03	354509 03	357534 03	359986 03	362064 03	363878 03	365496 03	366962 03	368305 03	368305 03
415.0	350933 03	353124 03	354971 03	357999 03	360451 03	362531 03	364347 03	365966 03	367432 03	368776 03	368776 03
415.5	351392 02	353585 03	355436 03	358463 03	360817 03	362998 03	364815 03	366436 03	367903 03	369248 03	369248 03
416.0	351852 03	354047 03	355896 03	358927 03	361183 03	363366 03	365284 03	366905 03	368373 03	369719 03	369719 03
416.5	352312 03	354508 03	356358 03	359392 03	361649 03	363933 03	365753 03	367375 03	368844 03	370191 03	370191 03
417.0	352771 03	354969 03	356821 03	359856 03	362216 03	364401 03	366221 03	367845 03	369315 03	370662 03	370662 03
417.5	353231 03	355430 03	357283 03	360321 03	362702 03	364860 03	366690 03	368314 03	369785 03	371134 03	371134 03
418.0	353691 03	355891 03	357746 03	360785 03	363248 03	365335 03	367158 03	368784 03	370256 03	371605 03	371605 03
418.5	354151 02	356353 03	358203 03	361249 03	363714 03	365803 03	367627 03	369254 03	370727 03	372077 03	372077 03
419.0	354610 02	356814 03	358671 03	361714 03	364180 03	366270 03	368096 03	369723 03	371197 03	372548 03	372548 03
419.5	355070 03	357275 03	359133 03	362179 03	364646 03	366738 03	368564 03	370193 03	371668 03	373020 03	373020 03
420.0	355530 03	357736 03	359596 03	362643 03	365112 03	367205 03	369033 03	370663 03	372139 03	373491 03	373491 03
420.5	355990 02	358198 03	360058 03	363108 03	365578 03	367673 03	369502 03	371133 03	372609 03	373963 03	373963 03
421.0	356450 03	358659 03	360521 03	363572 03	366045 03	368141 03	369971 03	371603 03	373080 03	374435 03	374435 03
421.5	356910 02	359120 03	360983 03	364037 03	366511 03	368608 03	370439 03	372072 03	373551 03	374906 03	374906 03
422.0	357370 03	359582 03	361446 03	364501 03	366977 03	369076 03	370908 03	372542 03	373422 03	374778 03	374778 03
422.5	357830 03	360043 03	361909 03	364966 03	367443 03	369543 03	371377 03	373012 03	374493 03	375850 03	375850 03
423.0	358290 02	360505 03	362371 03	365431 03	367910 03	370011 03	371846 03	373482 03	374963 03	376321 03	376321 03
423.5	358750 03	360966 03	362834 03	365895 03	368376 03	370479 03	372312 03	373952 03	375334 03	376693 03	376693 03
424.0	359210 03	361428 03	363297 03	366360 03	368842 03	370946 03	372784 03	374422 03	375805 03	377165 03	377165 03
424.5	359670 03	361889 03	363760 03	366825 03	369309 03	371414 03	373212 03	374892 03	376376 03	377737 03	377737 03
425.0	360130 03	362351 03	364222 03	367290 03	369775 03	371882 03	373721 03	375362 03	376847 03	378208 03	378208 03
425.5	360590 02	362812 03	364685 03	367754 03	370241 03	372350 03	374190 03	375832 03	377318 03	378680 03	378680 03
426.0	361050 03	363274 03	365148 03	368219 03	370708 03	372817 03	374651 03	376302 03	377789 03	379152 03	379152 03
426.5	361510 03	363736 03	365611 03	368684 03	371174 03	373285 03	375128 03	376772 03	378260 03	379624 03	379624 03
427.0	361970 03	364197 03	366074 03	369149 03	371641 03	373753 03	375597 03	377242 03	378731 03	380096 03	380096 03
427.5	362431 02	364659 03	366536 03	369614 03	372107 03	374221 03	376066 03	377712 03	379202 03	380567 03	380567 03
428.0	362891 02	365120 03	366999 03	370079 03	372574 03	374688 03	376535 03	378182 03	379673 03	381039 03	381039 03
428.5	363351 02	365582 03	367462 03	370544 03	373040 03	375156 03	377004 03	378652 03	380144 03	381511 03	381511 03
429.0	363811 02	366044 03	367925 03	371008 03	373507 03	375624 03	377473 03	379122 03	380615 03	381983 03	381983 03
429.5	364272 03	366506 03	368388 03	371473 03	373973 03	376092 03	377942 03	379592 03	381086 03	382455 03	382455 03
430.0	364732 03	366967 03	368851 03	371938 03	374440 03	376560 03	378411 03	380062 03	381557 03	382927 03	382927 03
430.5	365192 03	367429 03	369334 03	372403 03	374906 03	377028 03	378881 03	380532 03	382028 03	383399 03	383399 03
431.0	365653 02	367891 03	369777 03	372868 03	375373 03	377496 03	379349 03	381002 03	382499 03	383871 03	383871 03
431.5	366113 03	368353 03	370246 03	373333 03	375839 03	377964 03	379819 03	381473 03	382970 03	384343 03	384343 03
432.0	366574 03	368815 03	370703 03	373798 03	376306 03	378432 03	380288 03	381943 03	383441 03	384815 03	384815 03
432.5	367034 03	369277 03	371166 03	374263 03	376773 03	378900 03	380757 03	382413 03	383913 03	385287 03	385287 03
433.0	367494 02	369738 03	371629 03	374729 03	377239 03	379368 03	381226 03	382883 03	384384 03	385759 03	385759 03
433.5	367955 03	370200 03	372093 03	375194 03	377706 03	379836 03	381696 03	383353 03	384855 03	386231 03	386231 03
434.0	368415 02	370662 03	372556 03	375659 03	378173 03	380304 03	382165 03	383824 03	385326 03	386703 03	386703 03
434.5	368876 02	371124 03	373019 03	376124 03	378640 03	380772 03	382634 03	384294 03	385797 03	387175 03	387175 03
435.0	369336 03	371586 03	373482 03	376589 03	379106 03	381240 03	383103 03	384764 03	386269 03	387647 03	387647 03
435.5	369797 03	372048 03	373945 03	377054 03	379573 03	381708 03	383573 03	385235 03	386740 03	388119 03	388119 03
436.0	370258 03	372510 03	374409 03	377519 03	380040 03	382276 03	384042 03	385705 03	387211 03	388591 03	388591 03
436.5	370718 03	372972 03	374872 03	377965 03	380507 03	382845 03	384511 03	386175 03	387682 03	389064 03	389064 03
437.0	371179 02	373434 03	375335 03	378450 03	380974 03	383313 03	384980 03	386646 03	388154 03	389536 03	389536 03

Percentage Points of the χ^2 -Distribution Values of χ^2 in Terms of Q and ν

372640	372641	372642	372643	372644	372645	372646	372647	372648	372649	372650	372651	372652	372653	372654	372655	372656	372657	372658	372659	372660	372661	372662	372663	372664	372665	372666	372667	372668	372669	372670	372671	372672	372673	372674	372675	372676	372677	372678	372679	372680	372681	372682	372683	372684	372685	372686	372687	372688	372689	372690	372691	372692	372693	372694	372695	372696	372697	372698	372699	372700	372701	372702	372703	372704	372705	372706	372707	372708	372709	372710	372711	372712	372713	372714	372715	372716	372717	372718	372719	372720	372721	372722	372723	372724	372725	372726	372727	372728	372729	372730	372731	372732	372733	372734	372735	372736	372737	372738	372739	372740	372741	372742	372743	372744	372745	372746	372747	372748	372749	372750	372751	372752	372753	372754	372755	372756	372757	372758	372759	372760	372761	372762	372763	372764	372765	372766	372767	372768	372769	372770	372771	372772	372773	372774	372775	372776	372777	372778	372779	372780	372781	372782	372783	372784	372785	372786	372787	372788	372789	372790	372791	372792	372793	372794	372795	372796	372797	372798	372799	372800	372801	372802	372803	372804	372805	372806	372807	372808	372809	372810	372811	372812	372813	372814	372815	372816	372817	372818	372819	372820	372821	372822	372823	372824	372825	372826	372827	372828	372829	372830	372831	372832	372833	372834	372835	372836	372837	372838	372839	372840	372841	372842	372843	372844	372845	372846	372847	372848	372849	372850	372851	372852	372853	372854	372855	372856	372857	372858	372859	372860	372861	372862	372863	372864	372865	372866	372867	372868	372869	372870	372871	372872	372873	372874	372875	372876	372877	372878	372879	372880	372881	372882	372883	372884	372885	372886	372887	372888	372889	372890	372891	372892	372893	372894	372895	372896	372897	372898	372899	372900	372901	372902	372903	372904	372905	372906	372907	372908	372909	372910	372911	372912	372913	372914	372915	372916	372917	372918	372919	372920	372921	372922	372923	372924	372925	372926	372927	372928	372929	372930	372931	372932	372933	372934	372935	372936	372937	372938	372939	372940	372941	372942	372943	372944	372945	372946	372947	372948	372949	372950	372951	372952	372953	372954	372955	372956	372957	372958	372959	372960	372961	372962	372963	372964	372965	372966	372967	372968	372969	372970	372971	372972	372973	372974	372975	372976	372977	372978	372979	372980	372981	372982	372983	372984	372985	372986	372987	372988	372989	372990	372991	372992	372993	372994	372995	372996	372997	372998	372999	373000	373001	373002	373003	373004	373005	373006	373007	373008	373009	373010	373011	373012	373013	373014	373015	373016	373017	373018	373019	373020	373021	373022	373023	373024	373025	373026	373027	373028	373029	373030	373031	373032	373033	373034	373035	373036	373037	373038	373039	373040	373041	373042	373043	373044	373045	373046	373047	373048	373049	373050	373051	373052	373053	373054	373055	373056	373057	373058	373059	373060	373061	373062	373063	373064	373065	373066	373067	373068	373069	373070	373071	373072	373073	373074	373075	373076	373077	373078	373079	373080	373081	373082	373083	373084	373085	373086	373087	373088	373089	373090	373091	373092	373093	373094	373095	373096	373097	373098	373099	373100	373101	373102	373103	373104	373105	373106	373107	373108	373109	373110	373111	373112	373113	373114	373115	373116	373117	373118	373119	373120	373121	373122	373123	373124	373125	373126	373127	373128	373129	373130	373131	373132	373133	373134	373135	373136	373137	373138	373139	373140	373141	373142	373143	373144	373145	373146	373147	373148	373149	373150	373151	373152	373153	373154	373155	373156	373157	373158	373159	373160	373161	373162	373163	373164	373165	373166	373167	373168	373169	373170	373171	373172	373173	373174	373175	373176	373177	373178	373179	373180	373181	373182	373183	373184	373185	373186	373187	373188	373189	373190	373191	373192	373193	373194	373195	373196	373197	373198	373199	373200	373201	373202	373203	373204	373205	373206	373207	373208	373209	373210	373211	373212	373213	373214	373215	373216	373217	373218	373219	373220	373221	373222	373223	373224	373225	373226	373227	373228	373229	373230	373231	373232	373233	373234	373235	373236	373237	373238	373239	373240	373241	373242	373243	373244	373245	373246	373247	373248	373249	373250	373251	373252	373253	373254	373255	373256	373257	373258	373259	373260	373261	373262	373263	373264	373265	373266	373267	373268	373269	373270	373271	373272	373273	373274	373275	373276	373277	373278	373279	373280	373281	373282	373283	373284	373285	373286	373287	373288	373289	373290	373291	373292	373293	373294	373295	373296	373297	373298	373299	373300	373301	373302	373303	373304	373305	373306	373307	373308	373309	373310	373311	373312	373313	373314	373315	373316	373317	373318	373319	373320	373321	373322	373323	373324	373325	373326	373327	373328	373329	373330	373331	373332	373333	373334	373335	373336	373337	373338	373339	373340	373341	373342	373343	373344	373345	373346	373347	373348	373349	373350	373351	373352	373353	37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2

r/q	.9.5000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
1.1	370691-22	116893-19	308698-16	122571-13	106113-11	407579-10	889504-09	128525-07	135531-06	111478-05
1.2	603909-11	121461-09	700405-08	124376-06	115834-05	717217-05	335061-04	127368-03	413660-03	110670-02
1.3	390820-07	271457-06	405176-05	275787-04	122084-03	411706-03	115090-02	280520-02	616047-02	126096-01
1.4	309706-05	130510-04	991098-04	417703-03	122519-02	317558-02	687426-01	134391-01	263275-01	414927-01
1.5	421137-04	135011-03	683594-03	216177-02	528435-02	109826-01	234234-01	350448-01	566175-01	873476-01
1.6	248128-03	667443-03	250315-02	654068-02	173796-01	254533-01	428533-01	674796-01	181213-00	144622-00
1.7	879154-03	203084-02	638316-02	145652-01	276899-01	469482-01	736460-01	109267-00	155572-00	214739-00
1.8	228649-02	469775-02	129038-01	267845-01	471299-01	750038-01	111823-00	158074-00	217461-00	298156-00
1.9	463047-02	910331-02	227162-01	433564-01	710865-01	109174-00	156246-00	214367-00	285143-00	378657-00
1.0	886105-02	157930-01	357658-01	641848-01	101531-00	148472-00	205900-00	274996-00	357317-00	454936-00
1.1	146120-01	247335-01	521523-01	890340-01	135576-00	192278-00	259933-00	339667-00	433019-00	542873-00
1.2	222666-01	361209-01	717882-01	117607-00	173543-00	239978-00	317643-00	407645-00	511528-00	631604-00
1.3	319331-01	499025-01	945238-01	149589-00	214992-00	291046-00	378464-00	478359-00	592302-00	722448-00
1.4	436614-01	662916-01	120179-00	184677-00	259530-00	345040-00	441936-00	551360-00	674927-00	814847-00
1.5	574575-01	849810-01	142561-00	222586-00	308815-00	401589-00	507684-00	626292-00	759084-00	908334-00
1.6	732955-01	105964-00	175479-00	263057-00	356551-00	460384-00	575403-00	702871-00	844522-00	100278-01
1.7	911275-01	129137-00	212752-00	305858-00	403480-00	521161-00	644843-00	780867-00	931045-00	109779-01
1.8	118891-00	154393-00	248206-00	350723-00	462383-00	583702-00	715795-00	860094-00	101849-01	119349-01
1.9	132515-00	184624-00	285683-00	397647-00	518066-00	647818-00	788084-00	940398-00	110674-01	128968-01
2.0	155923-00	210721-00	325038-00	446287-00	575364-00	713350-00	861566-00	102165-01	119567-01	138629-01
2.1	181039-00	241562-00	361137-00	496559-00	634132-00	780160-00	936115-00	110375-01	128522-01	148327-01
2.2	207784-00	274209-00	408860-00	548335-00	694244-00	848131-00	101163-01	118659-01	137529-01	158055-01
2.3	236084-00	308210-00	453096-00	601500-00	755504-00	917160-00	108801-01	127012-01	146584-01	167818-01
2.4	265865-00	343797-00	498746-00	659592-00	810067-00	987156-00	114358-01	135425-01	155602-01	177527-01
2.5	297058-00	380789-00	545718-00	711599-00	848195-00	105804-01	124308-01	143894-01	164817-01	187325-01
2.6	329596-00	419112-00	593931-00	768361-00	946053-00	112975-01	132164-01	152413-01	173986-01	197280-01
2.7	363416-00	458695-00	642308-00	826163-00	101149-01	120222-01	140082-01	160979-01	183186-01	207838-01
2.8	398459-00	498473-00	693782-00	849388-00	101774-01	127539-01	148056-01	169587-01	192415-01	216874-01
2.9	434669-00	543485-00	745289-00	944626-00	114477-01	134921-01	156062-01	178234-01	202169-01	226738-01
3.0	471993-00	584374-00	797771-00	100517-01	121253-01	142365-01	164158-01	186917-01	210947-01	236597-01
3.1	510381-00	623889-00	851177-00	106653-01	128099-01	149867-01	172278-01	195634-01	228246-01	246474-01
3.2	549706-00	673381-00	905450-00	112865-01	135810-01	157422-01	180442-01	204382-01	229566-01	256359-01
3.3	590166-00	719374-00	960569-00	119149-01	141982-01	165027-01	188845-01	213159-01	238904-01	266252-01
3.4	631479-00	766117-00	101647-01	125502-01	149013-01	172681-01	196886-01	221964-01	248259-01	276152-01
3.5	673686-00	813778-00	107312-01	131920-01	156898-01	180379-01	205162-01	230795-01	257638-01	286859-01
3.6	716751-00	862253-00	113040-01	138399-01	163235-01	188121-01	213471-01	239650-01	267017-01	295971-01
3.7	760640-00	911506-00	118853-01	144937-01	170422-01	195902-01	221812-01	248527-01	276417-01	305889-01
3.8	805320-00	961505-00	124723-01	151531-01	177656-01	203722-01	230183-01	257426-01	285831-01	315811-01
3.9	850762-00	101222-01	130656-01	151179-01	184934-01	211579-01	238983-01	266346-01	295257-01	325738-01
4.0	896936-00	106362-01	136648-01	164878-01	192256-01	219470-01	247809-01	275284-01	304695-01	335669-01
4.1	943816-00	111569-01	142697-01	171625-01	199618-01	227394-01	255561-01	284241-01	314143-01	345684-01
4.2	991376-00	116839-01	148802-01	178420-01	207819-01	235350-01	263937-01	293216-01	323683-01	355542-01
4.3	103959-01	12170-01	154959-01	182259-01	214458-01	243337-01	272437-01	302207-01	333822-01	365484-01
4.4	108844-01	127560-01	161167-01	192141-01	221933-01	251352-01	280959-01	311213-01	342550-01	375428-01
4.5	113790-01	133007-01	167424-01	199065-01	229442-01	259395-01	289502-01	320235-01	352038-01	385375-01
4.6	118796-01	138509-01	173728-01	208029-01	236984-01	267465-01	298066-01	329272-01	361533-01	395325-01
4.7	123058-01	144064-01	180077-01	213031-01	244559-01	275560-01	306150-01	338322-01	371837-01	405277-01
4.8	128976-01	149671-01	186470-01	220079-01	252163-01	283680-01	315252-01	347385-01	380549-01	415231-01
4.9	134144-01	155327-01	192905-01	227144-01	259798-01	291824-01	323873-01	356462-01	390868-01	425188-01
5.0	139371-01	161031-01	199382-01	234253-01	267460-01	299991-01	332511-01	365550-01	399594-01	435146-01

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
5.1	.146645 01	.166781 01	.205897 01	.241396 01	.275151 01	.308179 01	.341166 01	.374650 01	.409127 01	.445106 01
5.2	.149968 01	.172577 01	.212451 01	.248570 01	.282867 01	.316389 01	.349837 01	.383762 01	.418667 01	.455068 01
5.3	.153338 01	.178416 01	.219043 01	.255776 01	.290610 01	.324620 01	.358523 01	.392884 01	.428212 01	.465081 01
5.4	.160754 01	.184298 01	.225669 01	.263012 01	.298377 01	.332870 01	.367225 01	.402017 01	.437764 01	.474996 01
5.5	.168215 01	.192221 01	.233331 01	.270277 01	.306168 01	.341140 01	.375942 01	.411160 01	.447321 01	.484962 01
5.6	.171719 01	.196184 01	.239027 01	.277570 01	.313983 01	.349428 01	.384672 01	.420313 01	.456884 01	.494938 01
5.7	.177266 01	.202185 01	.245755 01	.284890 01	.321820 01	.357734 01	.393417 01	.429475 01	.466453 01	.504899 01
5.8	.182854 01	.208225 01	.252515 01	.292238 01	.329679 01	.366058 01	.402174 01	.438646 01	.476026 01	.514869 01
5.9	.188482 01	.214301 01	.259306 01	.299611 01	.337559 01	.374398 01	.410944 01	.447827 01	.485604 01	.524840 01
6.0	.194149 01	.220413 01	.266127 01	.307009 01	.345460 01	.382755 01	.419727 01	.457015 01	.495188 01	.534812 01
6.1	.199854 01	.226560 01	.272978 01	.314431 01	.353381 01	.391120 01	.428522 01	.466213 01	.504776 01	.544785 01
6.2	.205597 01	.232741 01	.279857 01	.321878 01	.361321 01	.399516 01	.437328 01	.475418 01	.514368 01	.554759 01
6.3	.211375 01	.238954 01	.286763 01	.329347 01	.368280 01	.407920 01	.446146 01	.484631 01	.523965 01	.564734 01
6.4	.217189 01	.245200 01	.293697 01	.336839 01	.377258 01	.416338 01	.454975 01	.493851 01	.533565 01	.574710 01
6.5	.223037 01	.251478 01	.300657 01	.344353 01	.385254 01	.424770 01	.463815 01	.503080 01	.543170 01	.584687 01
6.6	.228918 01	.257786 01	.307642 01	.351888 01	.393267 01	.433216 01	.472665 01	.512315 01	.552779 01	.594664 01
6.7	.234833 01	.264124 01	.314653 01	.359444 01	.401297 01	.441676 01	.481525 01	.521557 01	.562392 01	.604643 01
6.8	.240779 01	.270491 01	.321688 01	.367021 01	.409344 01	.450149 01	.490395 01	.530806 01	.572009 01	.614621 01
6.9	.246757 01	.276887 01	.328746 01	.374617 01	.417407 01	.458635 01	.499275 01	.540061 01	.581629 01	.624601 01
7.0	.252766 01	.283311 01	.335828 01	.382232 01	.425485 01	.467133 01	.508165 01	.549323 01	.591252 01	.634581 01
7.1	.258804 01	.289762 01	.342933 01	.389867 01	.433579 01	.475643 01	.517063 01	.558592 01	.600879 01	.644562 01
7.2	.264872 01	.296239 01	.350060 01	.397519 01	.441688 01	.484166 01	.525971 01	.567866 01	.610510 01	.654543 01
7.3	.270968 01	.302743 01	.357209 01	.405190 01	.449812 01	.492700 01	.534887 01	.577147 01	.620143 01	.664525 01
7.4	.277093 01	.309272 01	.364379 01	.412878 01	.457951 01	.501245 01	.543812 01	.586433 01	.629780 01	.674508 01
7.5	.283245 01	.315826 01	.371570 01	.420584 01	.466103 01	.509802 01	.552745 01	.595725 01	.639420 01	.684491 01
7.6	.289424 01	.322425 01	.378781 01	.428306 01	.474269 01	.518369 01	.561686 01	.605022 01	.649063 01	.694474 01
7.7	.295629 01	.329007 01	.386812 01	.436045 01	.482448 01	.526947 01	.570635 01	.614325 01	.658709 01	.704458 01
7.8	.301860 01	.335633 01	.393262 01	.443800 01	.490641 01	.535535 01	.579592 01	.623633 01	.668357 01	.714442 01
7.9	.308116 01	.342282 01	.400532 01	.451571 01	.498846 01	.544134 01	.588557 01	.632946 01	.678009 01	.724427 01
8.0	.314397 01	.348954 01	.407820 01	.459357 01	.507064 01	.552742 01	.597529 01	.642265 01	.687663 01	.734412 01
8.1	.320763 01	.355647 01	.415126 01	.467159 01	.515294 01	.561360 01	.606508 01	.651588 01	.697320 01	.744398 01
8.2	.327032 01	.362363 01	.422451 01	.474975 01	.523537 01	.569988 01	.615495 01	.660916 01	.706999 01	.754324 01
8.3	.333385 01	.369099 01	.429793 01	.482806 01	.531791 01	.578625 01	.624488 01	.670249 01	.716641 01	.764370 01
8.4	.339761 01	.375956 01	.437152 01	.490651 01	.540057 01	.587271 01	.633489 01	.679586 01	.726316 01	.774357 01
8.5	.346159 01	.382834 01	.444528 01	.498510 01	.548334 01	.595926 01	.642496 01	.688928 01	.735973 01	.784344 01
8.6	.352579 01	.389432 01	.451921 01	.506382 01	.556622 01	.604590 01	.651509 01	.698275 01	.745642 01	.794331 01
8.7	.359022 01	.396249 01	.459330 01	.514269 01	.564921 01	.613263 01	.660529 01	.707626 01	.755313 01	.804319 01
8.8	.365485 01	.403086 01	.466755 01	.522168 01	.573231 01	.621944 01	.669556 01	.716981 01	.764907 01	.814307 01
8.9	.371970 01	.409442 01	.474196 01	.530080 01	.581552 01	.630633 01	.678588 01	.726340 01	.774663 01	.824295 01
9.0	.378475 01	.416816 01	.481652 01	.538005 01	.589883 01	.639331 01	.687627 01	.735703 01	.784342 01	.834283 01
9.1	.385000 01	.423739 01	.489124 01	.545943 01	.598224 01	.648036 01	.696671 01	.745071 01	.794022 01	.844272 01
9.2	.391546 01	.430619 01	.496610 01	.553853 01	.606574 01	.656479 01	.705722 01	.754442 01	.803795 01	.854261 01
9.3	.398111 01	.437548 01	.504111 01	.561854 01	.614935 01	.665470 01	.714778 01	.763818 01	.813389 01	.864250 01
9.4	.404695 01	.444494 01	.511626 01	.569828 01	.623305 01	.674199 01	.723840 01	.773197 01	.823076 01	.874240 01
9.5	.411298 01	.451456 01	.519155 01	.577813 01	.631685 01	.682935 01	.732807 01	.782579 01	.832764 01	.884230 01
9.6	.417920 01	.458436 01	.526699 01	.585810 01	.640374 01	.691678 01	.741980 01	.791966 01	.842455 01	.894220 01
9.7	.424560 01	.465433 01	.534256 01	.593818 01	.649374 01	.700429 01	.750508 01	.801356 01	.852147 01	.904210 01
9.8	.431218 01	.472445 01	.541826 01	.601837 01	.658680 01	.709186 01	.760142 01	.811750 01	.864101 01	.917200 01
9.9	.437894 01	.479474 01	.549409 01	.609867 01	.668255 01	.719551 01	.772331 01	.825701 01	.879757 01	.934491 01
10.0	.444587 01	.486518 01	.557006 01	.617938 01	.677320 01	.726722 01	.778324 01	.829551 01	.881235 01	.934182 01

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν/Q	.92500	.90000	.85000	.80000	.75000	.70000	.65000	.60000	.55000	.50000
10.1	.451298 01	.493578 01	.564615 01	.625959 01	.682153 01	.735530 01	.787423 01	.833951 01	.879835 01	.924473 01
10.2	.458025 01	.503653 01	.572237 01	.634021 01	.690595 01	.744284 01	.796527 01	.846358 01	.894636 01	.941164 01
10.3	.464769 01	.507744 01	.574872 01	.636202 01	.692845 01	.745076 01	.795835 01	.847769 01	.897339 01	.944155 01
10.4	.471530 01	.514849 01	.580518 01	.641801 01	.698503 01	.751077 01	.801428 01	.853182 01	.901844 01	.948147 01
10.5	.478307 01	.521368 01	.586177 01	.647461 01	.704169 01	.757077 01	.807486 01	.859599 01	.909550 01	.958139 01
10.6	.485099 01	.527913 01	.592647 01	.653937 01	.710642 01	.763907 01	.814899 01	.867191 01	.918350 01	.969431 01
10.7	.491908 01	.534251 01	.600000 01	.661291 01	.717996 01	.771216 01	.822416 01	.875442 01	.927950 01	.980412 02
10.8	.498732 01	.540313 01	.607223 01	.668514 01	.725219 01	.778438 01	.829638 01	.883868 01	.936479 01	.989411 02
10.9	.505571 01	.546589 01	.614527 01	.675818 01	.732523 01	.785742 01	.836942 01	.892191 01	.945302 01	.998611 02
11.0	.512425 01	.553778 01	.622643 01	.683934 01	.740640 01	.793859 01	.845059 01	.898282 01	.952901 01	.100410 02
11.1	.519294 01	.560981 01	.630000 01	.691291 01	.748000 01	.801219 01	.852419 01	.907642 01	.963101 01	.101449 02
11.2	.526170 01	.568197 01	.637200 01	.698491 01	.755200 01	.808419 01	.859619 01	.915842 01	.971601 01	.102489 02
11.3	.533076 01	.575427 01	.644400 01	.705691 01	.762400 01	.815619 01	.866819 01	.923042 01	.978801 01	.103529 02
11.4	.539989 01	.582668 01	.651600 01	.712891 01	.769600 01	.822819 01	.874019 01	.930242 01	.986001 01	.104569 02
11.5	.546915 01	.589923 01	.658800 01	.720091 01	.776800 01	.830019 01	.881219 01	.937442 01	.993201 01	.105609 02
11.6	.553855 01	.601190 01	.670000 01	.731291 01	.788000 01	.841219 01	.892419 01	.948642 01	.100401 01	.106649 02
11.7	.560809 01	.608469 01	.677200 01	.738491 01	.795200 01	.848419 01	.899619 01	.955842 01	.101401 01	.107689 02
11.8	.567777 01	.615761 01	.684500 01	.745791 01	.802500 01	.855719 01	.906919 01	.963142 01	.102401 01	.108729 02
11.9	.574758 01	.623064 01	.691800 01	.753091 01	.810000 01	.863219 01	.914419 01	.970642 01	.103401 01	.109769 02
12.0	.581751 01	.630380 01	.700000 01	.761291 01	.818000 01	.871219 01	.922419 01	.978642 01	.104401 01	.110809 02
12.1	.588750 01	.637707 01	.708000 01	.769000 01	.825800 01	.879019 01	.930219 01	.986442 01	.105401 01	.111849 02
12.2	.595778 01	.645045 01	.716000 01	.777000 01	.833800 01	.887019 01	.938219 01	.994442 01	.106401 01	.112889 02
12.3	.602810 01	.652395 01	.723000 01	.784000 01	.840800 01	.894019 01	.945219 01	.100742 01	.107401 01	.113929 02
12.4	.609855 01	.659756 01	.730000 01	.791000 01	.847800 01	.901019 01	.952219 01	.101742 01	.108401 01	.114969 02
12.5	.616912 01	.667120 01	.738000 01	.799000 01	.855800 01	.909019 01	.960219 01	.102742 01	.109401 01	.116009 02
12.6	.623981 01	.674511 01	.745000 01	.806000 01	.862800 01	.916019 01	.967219 01	.103742 01	.110401 01	.117049 02
12.7	.631063 01	.681905 01	.752000 01	.813000 01	.869800 01	.923019 01	.974219 01	.104742 01	.111401 01	.118089 02
12.8	.638156 01	.689310 01	.760000 01	.821000 01	.877800 01	.931019 01	.982219 01	.105742 01	.112401 01	.119129 02
12.9	.645261 01	.696725 01	.768000 01	.829000 01	.885800 01	.939019 01	.990219 01	.106742 01	.113401 01	.120169 02
13.0	.652377 01	.704150 01	.776000 01	.837000 01	.893800 01	.947019 01	.998219 01	.107742 01	.114401 01	.121209 02
13.2	.666645 01	.719032 01	.792000 01	.853000 01	.910000 01	.963219 01	.101442 01	.108401 01	.115401 01	.123399 02
13.4	.683957 01	.733955 01	.808000 01	.869000 01	.926000 01	.979219 01	.103142 01	.110401 01	.117401 01	.125597 02
13.6	.695313 01	.748916 01	.824000 01	.885000 01	.942000 01	.995219 01	.104142 01	.111401 01	.118401 01	.127395 02
13.8	.709711 01	.763916 01	.840000 01	.901000 01	.958000 01	.101142 01	.108401 01	.115401 01	.122401 01	.129395 02
14.0	.724151 01	.778953 01	.856000 01	.917000 01	.974000 01	.102142 01	.109401 01	.116401 01	.123401 01	.130395 02
14.2	.738633 01	.794620 01	.872000 01	.933000 01	.990000 01	.103142 01	.110401 01	.117401 01	.124401 01	.131395 02
14.4	.753154 01	.809130 01	.888000 01	.949000 01	.100000 01	.105142 01	.112401 01	.119401 01	.126401 01	.133395 02
14.6	.767714 01	.824203 01	.904000 01	.965000 01	.101000 01	.106142 01	.113401 01	.120401 01	.127401 01	.134395 02
14.8	.782313 01	.839662 01	.920000 01	.981000 01	.103000 01	.108142 01	.115401 01	.122401 01	.129401 01	.136395 02
15.0	.796949 01	.854676 01	.936000 01	.997000 01	.104000 01	.109142 01	.116401 01	.123401 01	.130401 01	.137395 02
15.2	.811622 01	.869922 01	.952000 01	.101000 01	.106142 01	.113401 01	.120401 01	.127401 01	.134395 02	.141395 02
15.4	.826331 01	.885200 01	.968000 01	.103000 01	.108142 01	.115401 01	.122401 01	.129401 01	.136395 02	.143395 02
15.6	.841075 01	.900511 01	.984000 01	.105000 01	.110142 01	.117401 01	.124401 01	.131395 02	.138395 02	.145395 02
15.8	.855854 01	.915852 01	.100000 01	.107000 01	.112142 01	.119401 01	.126401 01	.133395 02	.140395 02	.147395 02
16.0	.870667 01	.931224 01	.103000 01	.109000 01	.114142 01	.121401 01	.128401 01	.135395 02	.142395 02	.149395 02
16.2	.885513 01	.946625 01	.105000 01	.111000 01	.116142 01	.123401 01	.130401 01	.137395 02	.144395 02	.151395 02
16.4	.900392 01	.962056 01	.107000 01	.113000 01	.118142 01	.125401 01	.132401 01	.139395 02	.146395 02	.153395 02
16.6	.915302 01	.977516 01	.109000 01	.115000 01	.120142 01	.127401 01	.134395 02	.141395 02	.148395 02	.155395 02
16.8	.930244 01	.993053 01	.111000 01	.117000 01	.122142 01	.129401 01	.136395 02	.143395 02	.150395 02	.157395 02
17.0	.945217 01	.100852 02	.113000 01	.119000 01	.124142 01	.131401 01	.138395 02	.145395 02	.152395 02	.159395 02

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and P

χ^2/Q	.950000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
17.20	.960221 01	.132406 02	.112007 02	.121729 02	.129603 02	.137123 02	.144271 02	.151204 02	.150203 02	.165301 02
17.40	.975254 01	.130363 02	.114520 02	.123436 02	.131449 02	.138940 02	.146137 02	.153195 02	.160239 02	.167191 02
17.60	.990316 01	.128523 02	.112671 02	.121546 02	.129515 02	.137059 02	.144003 02	.151019 02	.162195 02	.169300 02
17.80	.100541 02	.126785 02	.110816 02	.119657 02	.127683 02	.135278 02	.142578 02	.150019 02	.164151 02	.171388 02
18.00	.102053 02	.125049 02	.109463 02	.118270 02	.126352 02	.133999 02	.141308 02	.150019 02	.166100 02	.173379 02
18.20	.103567 02	.123316 02	.107727 02	.116470 02	.124596 02	.132220 02	.139530 02	.150019 02	.168065 02	.175379 02
18.40	.105085 02	.121582 02	.106000 02	.114729 02	.122806 02	.130420 02	.137720 02	.150019 02	.170022 02	.177378 02
18.60	.106605 02	.119848 02	.104266 02	.112936 02	.121006 02	.128620 02	.135920 02	.150019 02	.171979 02	.179377 02
18.80	.108128 02	.118114 02	.102532 02	.111203 02	.119273 02	.126887 02	.134187 02	.150019 02	.173937 02	.181377 02
19.00	.109653 02	.116380 02	.100800 02	.109470 02	.117540 02	.125154 02	.132454 02	.150019 02	.175894 02	.183377 02
19.20	.111181 02	.114646 02	.099050 02	.107720 02	.115790 02	.123404 02	.130704 02	.150019 02	.177852 02	.185376 02
19.40	.112711 02	.112912 02	.097300 02	.105980 02	.114050 02	.121664 02	.128964 02	.150019 02	.179810 02	.187376 02
19.60	.114244 02	.111177 02	.095550 02	.104240 02	.112310 02	.119924 02	.127224 02	.150019 02	.181768 02	.189375 02
19.80	.115780 02	.109442 02	.093800 02	.102530 02	.110600 02	.118214 02	.125514 02	.150019 02	.183726 02	.191375 02
20.00	.117317 02	.107704 02	.092050 02	.100440 02	.108510 02	.116124 02	.123424 02	.150019 02	.185684 02	.193374 02
20.20	.118857 02	.105966 02	.090300 02	.098250 02	.106320 02	.113934 02	.121234 02	.150019 02	.187642 02	.195374 02
20.40	.120400 02	.104228 02	.088550 02	.096400 02	.104470 02	.112084 02	.119384 02	.150019 02	.189600 02	.197373 02
20.60	.121945 02	.102490 02	.086800 02	.094650 02	.102720 02	.110334 02	.117634 02	.150019 02	.191558 02	.199373 02
20.80	.123492 02	.100752 02	.085050 02	.092900 02	.100970 02	.108584 02	.115884 02	.150019 02	.193516 02	.201373 02
21.00	.125041 02	.099014 02	.083300 02	.091150 02	.099420 02	.107034 02	.114334 02	.150019 02	.195474 02	.203372 02
21.20	.126592 02	.097276 02	.081550 02	.089400 02	.097690 02	.105304 02	.112604 02	.150019 02	.197432 02	.205372 02
21.40	.128146 02	.095538 02	.079800 02	.087650 02	.095940 02	.103554 02	.110854 02	.150019 02	.199390 02	.207372 02
21.60	.129701 02	.093800 02	.078050 02	.085900 02	.094190 02	.101804 02	.109104 02	.150019 02	.201348 02	.209371 02
21.80	.131259 02	.092062 02	.076300 02	.084150 02	.092440 02	.100054 02	.107354 02	.150019 02	.203306 02	.211371 02
22.00	.132819 02	.090324 02	.074550 02	.082400 02	.090690 02	.098304 02	.105604 02	.150019 02	.205264 02	.213370 02
22.20	.134381 02	.088586 02	.072800 02	.080650 02	.088940 02	.096554 02	.103854 02	.150019 02	.207222 02	.215370 02
22.40	.135945 02	.086848 02	.071050 02	.078900 02	.087190 02	.094804 02	.102104 02	.150019 02	.209180 02	.217370 02
22.60	.137511 02	.085110 02	.069300 02	.077150 02	.085440 02	.093054 02	.100354 02	.150019 02	.211138 02	.219369 02
22.80	.139078 02	.083372 02	.067550 02	.075400 02	.083690 02	.091304 02	.098604 02	.150019 02	.213096 02	.221369 02
23.00	.140648 02	.081634 02	.065800 02	.073650 02	.081940 02	.089554 02	.096854 02	.150019 02	.215054 02	.223369 02
23.20	.142220 02	.079896 02	.064050 02	.071900 02	.080190 02	.087804 02	.095104 02	.150019 02	.217012 02	.225368 02
23.40	.143793 02	.078158 02	.062300 02	.070150 02	.078440 02	.086054 02	.093354 02	.150019 02	.218970 02	.227368 02
23.60	.145369 02	.076420 02	.060550 02	.068400 02	.076690 02	.084304 02	.091604 02	.150019 02	.220928 02	.229368 02
23.80	.146946 02	.074682 02	.058800 02	.066650 02	.074940 02	.082554 02	.089854 02	.150019 02	.222886 02	.231368 02
24.00	.148525 02	.072944 02	.057050 02	.064900 02	.073190 02	.080804 02	.088104 02	.150019 02	.224844 02	.233367 02
24.20	.150106 02	.071206 02	.055300 02	.063150 02	.071440 02	.079054 02	.086354 02	.150019 02	.226802 02	.235367 02
24.40	.151689 02	.069468 02	.053550 02	.061400 02	.069690 02	.077264 02	.084564 02	.150019 02	.228760 02	.237367 02
24.60	.153273 02	.067730 02	.051800 02	.059650 02	.067940 02	.075514 02	.082814 02	.150019 02	.230718 02	.239366 02
24.80	.154859 02	.066002 02	.050050 02	.057900 02	.066190 02	.073764 02	.081064 02	.150019 02	.232676 02	.241366 02
25.00	.156447 02	.064264 02	.048300 02	.056150 02	.064440 02	.072014 02	.079314 02	.150019 02	.234634 02	.243366 02
25.20	.158036 02	.062526 02	.046550 02	.054400 02	.062690 02	.070264 02	.077564 02	.150019 02	.236592 02	.245366 02
25.40	.159627 02	.060788 02	.044800 02	.052650 02	.060940 02	.068514 02	.075814 02	.150019 02	.238550 02	.247365 02
25.60	.161220 02	.059050 02	.043050 02	.050900 02	.059190 02	.066764 02	.074064 02	.150019 02	.240508 02	.249365 02
25.80	.162814 02	.057312 02	.041300 02	.049150 02	.057440 02	.065014 02	.072314 02	.150019 02	.242466 02	.251365 02
26.00	.164410 02	.055574 02	.039550 02	.047400 02	.055690 02	.063264 02	.070564 02	.150019 02	.244424 02	.253365 02
26.20	.166008 02	.053836 02	.037800 02	.045650 02	.053940 02	.061514 02	.068814 02	.150019 02	.246382 02	.255364 02
26.40	.167607 02	.052098 02	.036050 02	.043900 02	.052190 02	.059764 02	.067064 02	.150019 02	.248340 02	.257364 02
26.60	.169206 02	.050360 02	.034300 02	.042150 02	.050440 02	.058014 02	.065314 02	.150019 02	.250298 02	.259364 02
26.80	.170805 02	.048622 02	.032550 02	.040400 02	.048690 02	.056264 02	.063564 02	.150019 02	.252256 02	.261363 02
27.00	.172404 02	.046884 02	.030800 02	.038650 02	.046940 02	.054514 02	.061814 02	.150019 02	.254214 02	.263363 02
27.20	.174003 02	.045146 02	.029050 02	.036900 02	.045190 02	.052764 02	.060064 02	.150019 02	.256172 02	.265363 02

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
27.50	.176429 02	.185262 02	.195561 02	.211452 02	.222031 02	.231832 02	.241171 02	.250265 02	.259281 02	.268363 02
27.75	.178440 02	.187326 02	.197677 02	.213665 02	.224301 02	.234153 02	.243540 02	.252679 02	.261737 02	.270863 02
28.00	.180454 02	.189392 02	.200000 02	.216090 02	.226872 02	.236775 02	.245909 02	.255093 02	.264195 02	.273362 02
28.25	.182470 02	.191461 02	.202408 02	.218595 02	.229544 02	.239577 02	.248902 02	.258157 02	.267382 02	.276622 02
28.50	.184488 02	.193531 02	.204660 02	.220813 02	.231817 02	.241921 02	.251449 02	.260921 02	.269909 02	.278962 02
28.75	.186508 02	.195633 02	.206833 02	.222931 02	.233991 02	.244145 02	.253991 02	.263836 02	.273567 02	.283361 02
29.00	.188530 02	.197677 02	.208933 02	.224951 02	.235966 02	.246170 02	.255991 02	.265921 02	.275932 02	.285961 02
29.25	.190554 02	.199753 02	.211033 02	.226971 02	.237942 02	.248096 02	.257962 02	.267937 02	.278083 02	.288361 02
29.50	.192580 02	.201831 02	.213133 02	.229193 02	.240219 02	.250422 02	.260135 02	.269953 02	.279941 02	.289961 02
29.75	.194609 02	.203911 02	.215242 02	.231417 02	.242497 02	.252750 02	.262508 02	.271999 02	.281399 02	.290861 02
30.00	.196639 02	.205992 02	.217303 02	.233641 02	.244776 02	.255078 02	.264881 02	.274416 02	.283858 02	.293360 02
30.25	.198671 02	.208076 02	.219366 02	.235867 02	.246956 02	.257406 02	.267256 02	.276833 02	.286317 02	.295860 02
30.50	.200706 02	.210161 02	.221430 02	.238094 02	.249137 02	.259736 02	.269630 02	.279251 02	.288776 02	.298368 02
30.75	.202742 02	.212247 02	.223495 02	.240321 02	.251319 02	.261966 02	.272005 02	.281669 02	.291235 02	.300860 02
31.00	.204780 02	.214336 02	.225562 02	.242551 02	.253501 02	.264397 02	.274381 02	.284097 02	.293694 02	.303359 02
31.25	.206820 02	.216426 02	.227620 02	.244781 02	.255689 02	.266729 02	.276757 02	.286505 02	.296154 02	.305859 02
31.50	.208862 02	.218518 02	.229690 02	.246912 02	.257869 02	.269061 02	.279134 02	.288924 02	.298613 02	.308359 02
31.75	.210906 02	.220611 02	.231770 02	.249024 02	.260055 02	.271394 02	.281511 02	.291393 02	.301073 02	.310859 02
32.00	.212951 02	.222706 02	.233842 02	.251178 02	.262141 02	.273728 02	.283809 02	.293763 02	.303533 02	.313359 02
32.25	.214999 02	.224803 02	.235915 02	.253312 02	.264248 02	.276062 02	.286267 02	.296183 02	.305993 02	.315858 02
32.50	.217048 02	.226901 02	.237990 02	.255948 02	.266816 02	.278937 02	.288646 02	.298603 02	.308454 02	.318358 02
32.75	.219099 02	.229001 02	.240166 02	.258185 02	.269095 02	.281433 02	.291025 02	.301233 02	.310914 02	.320858 02
33.00	.221152 02	.231102 02	.242343 02	.260422 02	.271494 02	.283809 02	.293405 02	.303644 02	.313375 02	.323358 02
33.25	.223206 02	.233205 02	.244521 02	.262661 02	.273745 02	.286066 02	.295785 02	.306065 02	.315835 02	.325858 02
33.50	.225262 02	.235309 02	.246681 02	.264900 02	.276076 02	.288444 02	.298165 02	.308487 02	.318296 02	.328357 02
33.75	.227319 02	.237415 02	.248822 02	.267141 02	.278308 02	.290722 02	.300446 02	.310768 02	.320757 02	.330857 02
34.00	.229379 02	.239523 02	.250964 02	.269383 02	.281361 02	.294221 02	.304292 02	.314330 02	.324219 02	.334357 02
34.25	.231440 02	.241631 02	.253112 02	.271625 02	.283654 02	.297060 02	.307310 02	.317553 02	.327680 02	.338057 02
34.50	.233502 02	.243742 02	.255263 02	.273869 02	.285949 02	.299700 02	.309992 02	.319755 02	.329841 02	.340357 02
34.75	.235567 02	.245853 02	.257417 02	.276113 02	.288244 02	.299441 02	.310075 02	.320398 02	.330603 02	.340857 02
35.00	.237633 02	.247967 02	.259564 02	.278359 02	.290540 02	.301782 02	.312458 02	.322821 02	.333065 02	.343356 02
35.25	.239700 02	.250081 02	.261792 02	.280605 02	.292836 02	.304123 02	.314842 02	.325245 02	.335527 02	.345856 02
35.50	.241769 02	.252197 02	.263981 02	.282852 02	.295134 02	.306466 02	.317226 02	.327668 02	.337989 02	.348356 02
35.75	.243839 02	.254314 02	.266117 02	.285101 02	.297432 02	.308809 02	.319610 02	.330092 02	.340451 02	.350856 02
36.00	.245911 02	.256433 02	.268262 02	.287350 02	.299730 02	.311152 02	.321995 02	.332517 02	.342913 02	.353356 02
36.25	.247985 02	.258553 02	.270415 02	.289600 02	.302030 02	.313496 02	.324399 02	.334941 02	.345376 02	.355856 02
36.50	.250060 02	.260674 02	.272548 02	.291850 02	.304330 02	.315841 02	.326766 02	.337366 02	.347839 02	.358355 02
36.75	.252136 02	.262797 02	.274713 02	.294102 02	.306631 02	.318186 02	.329152 02	.339791 02	.350301 02	.360855 02
37.00	.254214 02	.264921 02	.276833 02	.296355 02	.308933 02	.320532 02	.331539 02	.342216 02	.352764 02	.363355 02
37.25	.256294 02	.267046 02	.278960 02	.298600 02	.311235 02	.322878 02	.333926 02	.344642 02	.355227 02	.365855 02
37.50	.258375 02	.269173 02	.281133 02	.300862 02	.313538 02	.325224 02	.336313 02	.347058 02	.357690 02	.368355 02
37.75	.260457 02	.271300 02	.283317 02	.303117 02	.315841 02	.327572 02	.338701 02	.349494 02	.360154 02	.370855 02
38.00	.262540 02	.273430 02	.285493 02	.305373 02	.318146 02	.329919 02	.341089 02	.351920 02	.362617 02	.373355 02
38.25	.264626 02	.275560 02	.287633 02	.307630 02	.320451 02	.332268 02	.343477 02	.354347 02	.365080 02	.375854 02
38.50	.266712 02	.277691 02	.289808 02	.309888 02	.322756 02	.334616 02	.345866 02	.356774 02	.367544 02	.378354 02
38.75	.268800 02	.279824 02	.291953 02	.312146 02	.325062 02	.336966 02	.348255 02	.359201 02	.370008 02	.380854 02
39.00	.270889 02	.281958 02	.294093 02	.314405 02	.327369 02	.339315 02	.350645 02	.361628 02	.372472 02	.383354 02
39.25	.272979 02	.284093 02	.296244 02	.316665 02	.329677 02	.341666 02	.353035 02	.364056 02	.374936 02	.385854 02
39.50	.275071 02	.286229 02	.298399 02	.318926 02	.331985 02	.344016 02	.355425 02	.366483 02	.377400 02	.388354 02
39.75	.277164 02	.288367 02	.300536 02	.321187 02	.334294 02	.346368 02	.357816 02	.368911 02	.379864 02	.390854 02

Percentage Points of the χ^2 Distribution
A Guide to χ^2 in Terms of Q and p

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80																				

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and r

0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015	0016	0017	0018	0019	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	0090	0091	0092	0093	0094	0095	0096	0097	0098	0099	0100	0101	0102	0103	0104	0105	0106	0107	0108	0109	0110	0111	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125	0126	0127	0128	0129	0130	0131	0132	0133	0134	0135	0136	0137	0138	0139	0140	0141	0142	0143	0144	0145	0146	0147	0148	0149	0150	0151	0152	0153	0154	0155	0156	0157	0158	0159	0160	0161	0162	0163	0164	0165	0166	0167	0168	0169	0170	0171	0172	0173	0174	0175	0176	0177	0178	0179	0180	0181	0182	0183	0184	0185	0186	0187	0188	0189	0190	0191	0192	0193	0194	0195	0196	0197	0198	0199	0200	0201	0202	0203	0204	0205	0206	0207	0208	0209	0210	0211	0212	0213	0214	0215	0216	0217	0218	0219	0220	0221	0222	0223	0224	0225	0226	0227	0228	0229	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	0251	0252	0253	0254	0255	0256	0257	0258	0259	0260	0261	0262	0263	0264	0265	0266	0267	0268	0269	0270	0271	0272	0273	0274	0275	0276	0277	0278	0279	0280	0281	0282	0283	0284	0285	0286	0287	0288	0289	0290	0291	0292	0293	0294	0295	0296	0297	0298	0299	0300	0301	0302	0303	0304	0305	0306	0307	0308	0309	0310	0311	0312	0313	0314	0315	0316	0317	0318	0319	0320	0321	0322	0323	0324	0325	0326	0327	0328	0329	0330	0331	0332	0333	0334	0335	0336	0337	0338	0339	0340	0341	0342	0343	0344	0345	0346	0347	0348	0349	0350	0351	0352	0353	0354	0355	0356	0357	0358	0359	0360	0361	0362	0363	0364	0365	0366	0367	0368	0369	0370	0371	0372	0373	0374	0375	0376	0377	0378	0379	0380	0381	0382	0383	0384	0385	0386	0387	0388	0389	0390	0391	0392	0393	0394	0395	0396	0397	0398	0399	0400	0401	0402	0403	0404	0405	0406	0407	0408	0409	0410	0411	0412	0413	0414	0415	0416	0417	0418	0419	0420	0421	0422	0423	0424	0425	0426	0427	0428	0429	0430	0431	0432	0433	0434	0435	0436	0437	0438	0439	0440	0441	0442	0443	0444	0445	0446	0447	0448	0449	0450	0451	0452	0453	0454	0455	0456	0457	0458	0459	0460	0461	0462	0463	0464	0465	0466	0467	0468	0469	0470	0471	0472	0473	0474	0475	0476	0477	0478	0479	0480	0481	0482	0483	0484	0485	0486	0487	0488	0489	0490	0491	0492	0493	0494	0495	0496	0497	0498	0499	0500
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Percentage Points of the χ^2 - Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
87.5	.692305 02	.710324 02	.730906 02	.762170 02	.782518 02	.801099 02	.818581 02	.835403 02	.851898 02	.868342 02
88.0	.696760 02	.714838 02	.735454 02	.766651 02	.787262 02	.805901 02	.823434 02	.840307 02	.856850 02	.873342 02
88.5	.701217 02	.719355 02	.740122 02	.771533 02	.792007 02	.810782 02	.828289 02	.845211 02	.861803 02	.878342 02
89.0	.705675 02	.723872 02	.744822 02	.776216 02	.796753 02	.815505 02	.833143 02	.850116 02	.866755 02	.883342 02
89.5	.710135 02	.728391 02	.750342 02	.781800 02	.801499 02	.820308 02	.837999 02	.855020 02	.871708 02	.888342 02
90.0	.714596 02	.732911 02	.754954 02	.786404 02	.806247 02	.825111 02	.842854 02	.859925 02	.876661 02	.893342 02
90.5	.719058 02	.737432 02	.759567 02	.790970 02	.810995 02	.829915 02	.847710 02	.864831 02	.881614 02	.898342 02
91.0	.723523 02	.741955 02	.771181 02	.794956 02	.815743 02	.834719 02	.852666 02	.869736 02	.886567 02	.903342 02
91.5	.727988 02	.746479 02	.775796 02	.799844 02	.820493 02	.839525 02	.857623 02	.874842 02	.891520 02	.908342 02
92.0	.732455 02	.751005 02	.780412 02	.804332 02	.825243 02	.844330 02	.862280 02	.879548 02	.896474 02	.913342 02
92.5	.736924 02	.755532 02	.785029 02	.809021 02	.829993 02	.849136 02	.867138 02	.884454 02	.901427 02	.918342 02
93.0	.741394 02	.760060 02	.789647 02	.813711 02	.834745 02	.853943 02	.871996 02	.889361 02	.906381 02	.923342 02
93.5	.745865 02	.764589 02	.794266 02	.818401 02	.839497 02	.858750 02	.876854 02	.894268 02	.911335 02	.928342 02
94.0	.750338 02	.769119 02	.798887 02	.823093 02	.844249 02	.863558 02	.881713 02	.899175 02	.916288 02	.933342 02
94.5	.754812 02	.773651 02	.803508 02	.827785 02	.849003 02	.868366 02	.886572 02	.904082 02	.921242 02	.938342 02
95.0	.759288 02	.778184 02	.808130 02	.832478 02	.853757 02	.873175 02	.891431 02	.908990 02	.926197 02	.943342 02
95.5	.763765 02	.782719 02	.812753 02	.837172 02	.858512 02	.877984 02	.896291 02	.913897 02	.931151 02	.948342 02
96.0	.768244 02	.787294 02	.817378 02	.841867 02	.863267 02	.882794 02	.901151 02	.918806 02	.936105 02	.953342 02
96.5	.772723 02	.791791 02	.822003 02	.846562 02	.868023 02	.887604 02	.906012 02	.923714 02	.941060 02	.958342 02
97.0	.777205 02	.796329 02	.826629 02	.851259 02	.872779 02	.892415 02	.910873 02	.928622 02	.946014 02	.963342 02
97.5	.781687 02	.800868 02	.831256 02	.855956 02	.877537 02	.897226 02	.915734 02	.933531 02	.950969 02	.968341 02
98.0	.786171 02	.805408 02	.835804 02	.860554 02	.882295 02	.902038 02	.920556 02	.938440 02	.955924 02	.973341 02
98.5	.790656 02	.809950 02	.840513 02	.865353 02	.887033 02	.906850 02	.925458 02	.943349 02	.960879 02	.978341 02
99.0	.795142 02	.814493 02	.845143 02	.870052 02	.891812 02	.911663 02	.930320 02	.948259 02	.965834 02	.983341 02
99.5	.799630 02	.819036 02	.849774 02	.874752 02	.896572 02	.916476 02	.935183 02	.953169 02	.970789 02	.988341 02
100.0	.804119 02	.823581 02	.854406 02	.879453 02	.901332 02	.921289 02	.940046 02	.958078 02	.975744 02	.993341 02
100.5	.808610 02	.828127 02	.859039 02	.884155 02	.906033 02	.926104 02	.944909 02	.962989 02	.980700 02	.998341 02
101.0	.813101 02	.832675 02	.863673 02	.888858 02	.910895 02	.930918 02	.949773 02	.967899 02	.985655 02	.100334 03
101.5	.817594 02	.837223 02	.868357 02	.893561 02	.915617 02	.935733 02	.954637 02	.972810 02	.990611 02	.100834 03
102.0	.822088 02	.841773 02	.872943 02	.898265 02	.920380 02	.940549 02	.959501 02	.977720 02	.995567 02	.101334 03
102.5	.826583 02	.846323 02	.877579 02	.902970 02	.925143 02	.945365 02	.964366 02	.982631 02	.100052 03	.101834 03
103.0	.831080 02	.850875 02	.882217 02	.907675 02	.929907 02	.950181 02	.969231 02	.987543 02	.100548 03	.102334 03
103.5	.835578 02	.855428 02	.886855 02	.912381 02	.934671 02	.954998 02	.974096 02	.992454 02	.101043 03	.102834 03
104.0	.840077 02	.859982 02	.891494 02	.917018 02	.939436 02	.959815 02	.978962 02	.997366 02	.101539 03	.103334 03
104.5	.844577 02	.864537 02	.896134 02	.921796 02	.944202 02	.964633 02	.983828 02	.100228 03	.102035 03	.103834 03
105.0	.849079 02	.869093 02	.900775 02	.926504 02	.948968 02	.969451 02	.988695 02	.100719 03	.102530 03	.104334 03
105.5	.853581 02	.873650 02	.905416 02	.931213 02	.953735 02	.974270 02	.993561 02	.101210 03	.103026 03	.104834 03
106.0	.858085 02	.878208 02	.910059 02	.935922 02	.958502 02	.979689 02	.998428 02	.101701 03	.103522 03	.105334 03
106.5	.862590 02	.882767 02	.914702 02	.940633 02	.963270 02	.983908 02	.100330 03	.102193 03	.104017 03	.105834 03
107.0	.867096 02	.887327 02	.919347 02	.945344 02	.968038 02	.988728 02	.100816 03	.102664 03	.104513 03	.106334 03
107.5	.871604 02	.891889 02	.923992 02	.950056 02	.972807 02	.993548 02	.101303 03	.103175 03	.105009 03	.106834 03
108.0	.876112 02	.896451 02	.928637 02	.954768 02	.977577 02	.998369 02	.101790 03	.103667 03	.105504 03	.107334 03
108.5	.880622 02	.901014 02	.933284 02	.959481 02	.982347 02	.100319 03	.102277 03	.104158 03	.106008 03	.107834 03
109.0	.885132 02	.905579 02	.937932 02	.964195 02	.987117 02	.100801 03	.102764 03	.104649 03	.106496 03	.108334 03
109.5	.889644 02	.910144 02	.942580 02	.968890 02	.991888 02	.101283 03	.103251 03	.105141 03	.106992 03	.108834 03
110.0	.894157 02	.914710 02	.947229 02	.973624 02	.996660 02	.101766 03	.103738 03	.105632 03	.107487 03	.109334 03
110.5	.898671 02	.919278 02	.951879 02	.978340 02	.100143 03	.102248 03	.104225 03	.106124 03	.107983 03	.109834 03
111.0	.903187 02	.923846 02	.956530 02	.983056 02	.100628 03	.102730 03	.104712 03	.106615 03	.108479 03	.110334 03
111.5	.907703 02	.928415 02	.961182 02	.987773 02	.101098 03	.103213 03	.105199 03	.107107 03	.108975 03	.110834 03
112.0	.912220 02	.932946 02	.965834 02	.992491 02	.101575 03	.103695 03	.105686 03	.107598 03	.109476 03	.111334 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν/Q	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
112.5	.916739 02	.937557 02	.970487 02	.997209 02	.102053 03	.104177 03	.106173 03	.108090 03	.109966 03	.111834 03
113.0	.921256 02	.942129 02	.975141 02	.100193 03	.102520 03	.104660 03	.106660 03	.108581 03	.110462 03	.112334 03
113.5	.925779 02	.946702 02	.979795 02	.100665 03	.103008 03	.105142 03	.107147 03	.109073 03	.110958 03	.112834 03
114.0	.930301 02	.951276 02	.984451 02	.101137 03	.103485 03	.105625 03	.107634 03	.109564 03	.111454 03	.113334 03
114.5	.934823 02	.955851 02	.989107 02	.101609 03	.103963 03	.106108 03	.108121 03	.110056 03	.111949 03	.113834 03
115.0	.939347 02	.960427 02	.993764 02	.102081 03	.104440 03	.106598 03	.108609 03	.110547 03	.112445 03	.114334 03
115.5	.943872 02	.965004 02	.998422 02	.102553 03	.104918 03	.107073 03	.109096 03	.111039 03	.112941 03	.114834 03
116.0	.948398 02	.969582 02	.100308 03	.103025 03	.105396 03	.107556 03	.109583 03	.111531 03	.113437 03	.115334 03
116.5	.952925 02	.974160 02	.100774 03	.103498 03	.105874 03	.108038 03	.110071 03	.112022 03	.113933 03	.115834 03
117.0	.957453 02	.978740 02	.101240 03	.103973 03	.106352 03	.108521 03	.110558 03	.112514 03	.114429 03	.116334 03
117.5	.961981 02	.983320 02	.101706 03	.104443 03	.106829 03	.109004 03	.111045 03	.113006 03	.114925 03	.116834 03
118.0	.966511 02	.987902 02	.102172 03	.104915 03	.107307 03	.109487 03	.111533 03	.113498 03	.115420 03	.117334 03
118.5	.971042 02	.992484 02	.102638 03	.105388 03	.107785 03	.109970 03	.112020 03	.113989 03	.115916 03	.117834 03
119.0	.975574 02	.997067 02	.103105 03	.105860 03	.108263 03	.110453 03	.112508 03	.114481 03	.116412 03	.118334 03
119.5	.980107 02	.100165 03	.103571 03	.106333 03	.108742 03	.110936 03	.112995 03	.114973 03	.116908 03	.118834 03
120.0	.984641 02	.100624 03	.104037 03	.106806 03	.109220 03	.111419 03	.113483 03	.115465 03	.117404 03	.119334 03
120.5	.989176 02	.101082 03	.104504 03	.107278 03	.109698 03	.111902 03	.113970 03	.115956 03	.117900 03	.119834 03
121.0	.993712 02	.101541 03	.104970 03	.107751 03	.110176 03	.112385 03	.114458 03	.116448 03	.118396 03	.120334 03
121.5	.998248 02	.102000 03	.105437 03	.108224 03	.110654 03	.112868 03	.114945 03	.116940 03	.118892 03	.120834 03
122.0	.100279 03	.102458 03	.105904 03	.108697 03	.111133 03	.113351 03	.115433 03	.117432 03	.119388 03	.121334 03
122.5	.100732 03	.102917 03	.106371 03	.109178 03	.111611 03	.113834 03	.115920 03	.117924 03	.119884 03	.121834 03
123.0	.101186 03	.103376 03	.106837 03	.109643 03	.112089 03	.114317 03	.116408 03	.118416 03	.120380 03	.122334 03
123.5	.101640 03	.103835 03	.107304 03	.110116 03	.112568 03	.114801 03	.116896 03	.118908 03	.120876 03	.122834 03
124.0	.102095 03	.104295 03	.107771 03	.110589 03	.113046 03	.115284 03	.117384 03	.119399 03	.121372 03	.123334 03
124.5	.102549 03	.104754 03	.108238 03	.111063 03	.113525 03	.115767 03	.117871 03	.119891 03	.121868 03	.123834 03
125.0	.103003 03	.105213 03	.108695 03	.111536 03	.114004 03	.116251 03	.118359 03	.120383 03	.122364 03	.124334 03
125.5	.103458 03	.105673 03	.109173 03	.112009 03	.114482 03	.116734 03	.118847 03	.120875 03	.122860 03	.124834 03
126.0	.103912 03	.106132 03	.109640 03	.112483 03	.114961 03	.117217 03	.119335 03	.121367 03	.123356 03	.125334 03
126.5	.104367 03	.106592 03	.110107 03	.112956 03	.115440 03	.117701 03	.119822 03	.121859 03	.123852 03	.125834 03
127.0	.104821 03	.107051 03	.110574 03	.113430 03	.115918 03	.118184 03	.120310 03	.122351 03	.124348 03	.126334 03
127.5	.105276 03	.107511 03	.111042 03	.113903 03	.116397 03	.118668 03	.120798 03	.122843 03	.124844 03	.126834 03
128.0	.105731 03	.107971 03	.111509 03	.114377 03	.116876 03	.119151 03	.121286 03	.123335 03	.125340 03	.127334 03
128.5	.106186 03	.108431 03	.111977 03	.114850 03	.117355 03	.119635 03	.121774 03	.123827 03	.125836 03	.127834 03
129.0	.106641 03	.108891 03	.112445 03	.115324 03	.117834 03	.120118 03	.122262 03	.124320 03	.126332 03	.128334 03
129.5	.107096 03	.109351 03	.112912 03	.115798 03	.118313 03	.120602 03	.122750 03	.124812 03	.126828 03	.128834 03
130.0	.107552 03	.109811 03	.113380 03	.116272 03	.118792 03	.121086 03	.123238 03	.125304 03	.127324 03	.129334 03
130.5	.108007 03	.110271 03	.113848 03	.116746 03	.119271 03	.121570 03	.123726 03	.125796 03	.127820 03	.129834 03
131.0	.108462 03	.110732 03	.114316 03	.117219 03	.119750 03	.122053 03	.124214 03	.126288 03	.128316 03	.130334 03
131.5	.108918 03	.111192 03	.114784 03	.117693 03	.120229 03	.122537 03	.124702 03	.126780 03	.128813 03	.130834 03
132.0	.109373 03	.111652 03	.115252 03	.118167 03	.120708 03	.123021 03	.125190 03	.127272 03	.129309 03	.131334 03
132.5	.109829 03	.112113 03	.115720 03	.118641 03	.121187 03	.123505 03	.125678 03	.127765 03	.129805 03	.131834 03
133.0	.110285 03	.112573 03	.116188 03	.119116 03	.121667 03	.123989 03	.126166 03	.128257 03	.130301 03	.132334 03
133.5	.110740 03	.113034 03	.116756 03	.119690 03	.122246 03	.124572 03	.126755 03	.128749 03	.130797 03	.132834 03
134.0	.111196 03	.113495 03	.117124 03	.120064 03	.122625 03	.124956 03	.127143 03	.129193 03	.131293 03	.133334 03
134.5	.111652 03	.113956 03	.117592 03	.120538 03	.123105 03	.125440 03	.127631 03	.129733 03	.131789 03	.133834 03
135.0	.112108 03	.114417 03	.118061 03	.120912 03	.123584 03	.125924 03	.128119 03	.130226 03	.132286 03	.134334 03
135.5	.112565 03	.114877 03	.118529 03	.121367 03	.124063 03	.126408 03	.128608 03	.130718 03	.132782 03	.134834 03
136.0	.113021 03	.115338 03	.118998 03	.121817 03	.124543 03	.126892 03	.129096 03	.131210 03	.133278 03	.135334 03
136.5	.113477 03	.115800 03	.119466 03	.122286 03	.125022 03	.127376 03	.129584 03	.131703 03	.133774 03	.135834 03
137.0	.113933 03	.116261 03	.119935 03	.122760 03	.125502 03	.127860 03	.130072 03	.132195 03	.134270 03	.136334 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
137.5	114390 03	116722 03	120404 03	123305 03	125902 03	128345 03	130561 03	132687 03	134766 03	136834 03
138.0	114847 03	117183 03	120872 03	123859 03	126461 03	128929 03	131049 03	133180 03	135263 03	137334 03
138.5	115313 03	117645 03	121341 03	124334 03	126941 03	129313 03	131537 03	133672 03	135759 03	137834 03
139.0	115760 03	118096 03	121810 03	124809 03	127421 03	129797 03	132026 03	134164 03	136255 03	138334 03
139.5	116217 03	118558 03	122279 03	125283 03	127900 03	130281 03	132514 03	134657 03	136751 03	138834 03
140.0	116674 03	119029 03	122748 03	125758 03	128380 03	130766 03	133003 03	135149 03	137248 03	139334 03
140.5	117130 03	119491 03	123217 03	126233 03	128860 03	131250 03	133491 03	135641 03	137744 03	139834 03
141.0	117588 03	119953 03	123686 03	126708 03	129340 03	131734 03	133980 03	136134 03	138240 03	140334 03
141.5	118045 03	120414 03	124155 03	127183 03	129820 03	132219 03	134468 03	136626 03	138736 03	140834 03
142.0	118502 03	120876 03	124624 03	127658 03	130299 03	132703 03	134957 03	137119 03	139233 03	141334 03
142.5	118959 03	121338 03	125093 03	128133 03	130779 03	133187 03	135445 03	137611 03	139729 03	141834 03
143.0	119416 03	121800 03	125562 03	128608 03	131259 03	133672 03	135934 03	138104 03	140225 03	142334 03
143.5	119874 03	122262 03	126032 03	129083 03	131739 03	134156 03	136422 03	138596 03	140721 03	142834 03
144.0	120331 03	122724 03	126501 03	129558 03	132219 03	134641 03	136911 03	139089 03	141218 03	143334 03
144.5	120789 03	123187 03	126970 03	130033 03	132700 03	135125 03	137400 03	139581 03	141714 03	143834 03
145.0	121246 03	123649 03	127440 03	130508 03	133180 03	135610 03	137888 03	140074 03	142210 03	144334 03
145.5	121704 03	124111 03	127909 03	130983 03	133660 03	136095 03	138377 03	140566 03	142707 03	144834 03
146.0	122162 03	124574 03	128379 03	131459 03	134140 03	136579 03	138866 03	141059 03	143203 03	145334 03
146.5	122620 03	125036 03	128849 03	131934 03	134620 03	137064 03	139354 03	141551 03	143699 03	145834 03
147.0	123078 03	125499 03	129318 03	132409 03	135101 03	137548 03	139843 03	142044 03	144195 03	146334 03
147.5	123536 03	125961 03	129788 03	132885 03	135581 03	138033 03	140332 03	142537 03	144692 03	146834 03
148.0	123994 03	126424 03	130258 03	133360 03	136061 03	138518 03	140821 03	143029 03	145188 03	147334 03
148.5	124452 03	126887 03	130728 03	133836 03	136542 03	139003 03	141309 03	143522 03	145684 03	147834 03
149.0	124910 03	127349 03	131198 03	134311 03	137022 03	139497 03	141798 03	144015 03	146181 03	148334 03
149.5	125368 03	127812 03	131667 03	134787 03	137502 03	139982 03	142287 03	144507 03	146677 03	148834 03
150.0	125827 03	128275 03	132137 03	135263 03	137983 03	140467 03	142776 03	145000 03	147174 03	149334 03
150.5	126285 03	128738 03	132608 03	135738 03	138463 03	140942 03	143265 03	145492 03	147670 03	149834 03
151.0	126743 03	129201 03	133078 03	136214 03	138944 03	141427 03	143754 03	145985 03	148156 03	150334 03
151.5	127202 03	129664 03	133548 03	136690 03	139424 03	141911 03	144242 03	146478 03	148663 03	150834 03
152.0	127661 03	130127 03	134018 03	137165 03	139905 03	142396 03	144731 03	146971 03	149159 03	151334 03
152.5	128119 03	130590 03	134488 03	137641 03	140386 03	142881 03	145220 03	147463 03	149655 03	151834 03
153.0	128578 03	131054 03	134958 03	138117 03	140866 03	143366 03	145709 03	147956 03	150152 03	152334 03
153.5	129037 03	131517 03	135429 03	138593 03	141347 03	143851 03	146198 03	148449 03	150648 03	152834 03
154.0	129496 03	131980 03	135899 03	139069 03	141828 03	144336 03	146687 03	148942 03	151145 03	153334 03
154.5	129955 03	132444 03	136370 03	139545 03	142308 03	144821 03	147176 03	149434 03	151641 03	153834 03
155.0	130414 03	132907 03	136840 03	140021 03	142789 03	145306 03	147665 03	149927 03	152137 03	154334 03
155.5	130873 03	133371 03	137311 03	140497 03	143270 03	145791 03	148154 03	150420 03	152634 03	154834 03
156.0	131332 03	133835 03	137781 03	140973 03	143751 03	146277 03	148643 03	150913 03	153130 03	155334 03
156.5	131791 03	134298 03	138252 03	141449 03	144232 03	146762 03	149132 03	151405 03	153627 03	155834 03
157.0	132250 03	134762 03	138722 03	141926 03	144713 03	147247 03	149621 03	151898 03	154123 03	156334 03
157.5	132710 03	135226 03	139193 03	142402 03	145194 03	147732 03	150111 03	152391 03	154620 03	156834 03
158.0	133169 03	135690 03	139664 03	142878 03	145675 03	148217 03	150600 03	152884 03	155116 03	157334 03
158.5	133629 03	136154 03	140135 03	143354 03	146156 03	148702 03	151089 03	153377 03	155613 03	157834 03
159.0	134088 03	136618 03	140606 03	143831 03	146637 03	149188 03	151578 03	153870 03	156109 03	158334 03
159.5	134548 03	137082 03	141077 03	144307 03	147118 03	149673 03	152067 03	154363 03	156605 03	158834 03
160.0	135007 03	137546 03	141547 03	144783 03	147599 03	150158 03	152556 03	154856 03	157102 03	159334 03
160.5	135467 03	138010 03	142018 03	145260 03	148080 03	150644 03	153046 03	155348 03	157598 03	159834 03
161.0	135927 03	138474 03	142490 03	145736 03	148561 03	151129 03	153535 03	155841 03	158095 03	160334 03
161.5	136387 03	138938 03	142961 03	146213 03	149042 03	151614 03	154024 03	156334 03	158591 03	160834 03
162.0	136847 03	139403 03	143432 03	146689 03	149523 03	152100 03	154513 03	156827 03	159088 03	161334 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
162.5	.137307 03	.139867 03	.142903 03	.147166 03	.150005 03	.152585 03	.155003 03	.157320 03	.159584 03	.161834 03
163.0	.137767 02	.140331 03	.143374 03	.147643 03	.150486 03	.153071 03	.155492 03	.157813 03	.160081 03	.162334 03
163.5	.138227 02	.140796 03	.143845 03	.148119 03	.150967 03	.153556 03	.155981 03	.158306 03	.160577 03	.162834 03
164.0	.138687 02	.141260 03	.144317 03	.148596 03	.151449 03	.154041 03	.156471 03	.158799 03	.161074 03	.163334 03
164.5	.139147 03	.141725 03	.144788 03	.149073 03	.151930 03	.154524 03	.156960 03	.159292 03	.161570 03	.163834 03
165.0	.139607 03	.142190 03	.145259 03	.149549 03	.152411 03	.155012 03	.157449 03	.159785 03	.162067 03	.164334 03
165.5	.140068 02	.142654 03	.145731 03	.150026 03	.152893 03	.155490 03	.157939 03	.160278 03	.162563 03	.164834 03
166.0	.140528 03	.143119 03	.146203 03	.150503 03	.153374 03	.155984 03	.158428 03	.160771 03	.163060 03	.165334 03
166.5	.140989 03	.143584 03	.146674 03	.150980 03	.153856 03	.156469 03	.158917 03	.161264 03	.163557 03	.165834 03
167.0	.141449 03	.144049 03	.147145 03	.151457 03	.154337 03	.156955 03	.159407 03	.161757 03	.164053 03	.166334 03
167.5	.141910 03	.144514 03	.147617 03	.151934 03	.154819 03	.157440 02	.159896 03	.162250 03	.164550 03	.166834 03
168.0	.142370 02	.144979 03	.148089 03	.152411 03	.155308 03	.157926 03	.160386 03	.162743 03	.165046 03	.167334 03
168.5	.142831 03	.145444 03	.148560 03	.152888 03	.155782 03	.158412 03	.160875 03	.163236 03	.165543 03	.167834 03
169.0	.143292 03	.145909 03	.149032 03	.153365 03	.156263 03	.158897 03	.161365 03	.163729 03	.166039 03	.168334 03
169.5	.143753 03	.146374 03	.149504 03	.153842 03	.156745 03	.159383 03	.161854 03	.164223 03	.166536 03	.168834 03
170.0	.144214 03	.146839 03	.150076 03	.154419 03	.157327 03	.159969 03	.162344 03	.164716 03	.167033 03	.169334 03
170.5	.144675 03	.147304 03	.150548 03	.154896 03	.157808 03	.160455 03	.162833 03	.165209 03	.167529 03	.169834 03
171.0	.145136 03	.147769 03	.151020 03	.155373 03	.158288 03	.160940 03	.163323 03	.165702 03	.168026 03	.170334 03
171.5	.145597 03	.148235 03	.151491 03	.155851 03	.158772 03	.161426 03	.163812 03	.166195 03	.168522 03	.170834 03
172.0	.146058 03	.148700 03	.151963 03	.156328 03	.159254 03	.161912 03	.164302 03	.166688 03	.169019 03	.171334 03
172.5	.146519 03	.149165 03	.152435 03	.156805 03	.159735 03	.162398 03	.164792 03	.167181 03	.169516 03	.171834 03
173.0	.146980 03	.149631 03	.152908 03	.157282 03	.160217 03	.162884 03	.165281 03	.167675 03	.170012 03	.172334 03
173.5	.147441 03	.150096 03	.153378 03	.157760 03	.160703 03	.163370 03	.165771 03	.168168 03	.170509 03	.172834 03
174.0	.147903 03	.150562 03	.153849 03	.158237 03	.161181 03	.163856 03	.166260 03	.168661 03	.171005 03	.173334 03
174.5	.148364 03	.151028 03	.154319 03	.158713 03	.161663 03	.164344 03	.166750 03	.169154 03	.171502 03	.173834 03
175.0	.148825 03	.151493 03	.154789 03	.159182 03	.162137 03	.164827 03	.167240 03	.169647 03	.171999 03	.174334 03
175.5	.149287 03	.151959 03	.155259 03	.159659 03	.162627 03	.165323 03	.167729 03	.170141 03	.172495 03	.174834 03
176.0	.149749 03	.152425 03	.155729 03	.160137 03	.163109 03	.165809 03	.168219 03	.170636 03	.172992 03	.175334 03
176.5	.150210 02	.152891 03	.156193 03	.160605 03	.163583 03	.166285 03	.168709 03	.171127 03	.173489 03	.175834 03
177.0	.150672 03	.153356 03	.156672 03	.161092 03	.164073 03	.166781 03	.169199 03	.171620 03	.173985 03	.176334 03
177.5	.151133 03	.153822 03	.157148 03	.161580 03	.164565 03	.167277 03	.169698 03	.172114 03	.174482 03	.176834 03
178.0	.151595 03	.154288 03	.157620 03	.162063 03	.165057 03	.167778 03	.170198 03	.172607 03	.174979 03	.177334 03
178.5	.152057 03	.154754 03	.158093 03	.162535 03	.165541 03	.168270 03	.170688 03	.173100 03	.175475 03	.177834 03
179.0	.152519 03	.155220 03	.158569 03	.163013 03	.166031 03	.168770 03	.171198 03	.173613 03	.175992 03	.178334 03
179.5	.152984 03	.155686 03	.159043 03	.163490 03	.166520 03	.169270 03	.171697 03	.174109 03	.176489 03	.178834 03
180.0	.153443 02	.156153 03	.159520 03	.164013 03	.167053 03	.169813 03	.172240 03	.174650 03	.176965 03	.179334 03
180.5	.153905 03	.156619 03	.160003 03	.164513 03	.167563 03	.170333 03	.172760 03	.175163 03	.177462 03	.179834 03
181.0	.154367 03	.157085 03	.160483 03	.165013 03	.168073 03	.170853 03	.173280 03	.175677 03	.177959 03	.180334 03
181.5	.154829 03	.157551 03	.160969 03	.165513 03	.168583 03	.171373 03	.173800 03	.176197 03	.178455 03	.180834 03
182.0	.155291 03	.158018 03	.161448 03	.166013 03	.169093 03	.171893 03	.174320 03	.176723 03	.178982 03	.181334 03
182.5	.155754 03	.158484 03	.161925 03	.166513 03	.169603 03	.172413 03	.174840 03	.177243 03	.179499 03	.181834 03
183.0	.156216 03	.158951 03	.162403 03	.167013 03	.170103 03	.172923 03	.175350 03	.177753 03	.179945 03	.182334 03
183.5	.156678 03	.159417 03	.162920 03	.167543 03	.170633 03	.173463 03	.175890 03	.178293 03	.180485 03	.182834 03
184.0	.157141 03	.159885 03	.163393 03	.168023 03	.171113 03	.173953 03	.176380 03	.178783 03	.180939 03	.183334 03
184.5	.157603 03	.160350 03	.163869 03	.168513 03	.171603 03	.174453 03	.176880 03	.179283 03	.181435 03	.183834 03
185.0	.158066 03	.160817 03	.164343 03	.169003 03	.172093 03	.174943 03	.177370 03	.179773 03	.181932 03	.184334 03
185.5	.158528 03	.161283 03	.164819 03	.169483 03	.172573 03	.175423 03	.177850 03	.180253 03	.182429 03	.184834 03
186.0	.158991 02	.161750 03	.165293 03	.169963 03	.173053 03	.175903 03	.178330 03	.180733 03	.182926 03	.185334 03
186.5	.159453 03	.162217 03	.165768 03	.170443 03	.173533 03	.176383 03	.178810 03	.181213 03	.183422 03	.185834 03
187.0	.159916 03	.162684 03	.166243 03	.170923 03	.174013 03	.176863 03	.179290 03	.181693 03	.183919 03	.186334 03

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	.925000	.930000	.950000	.960000	.750000	.700500	.650000	.600000	.550000	.500000
187.5	.160379 03	.163150 03	.167514 03	.171038 03	.174101 03	.176882 03	.179466 03	.181981 03	.184416 03	.186834 03
188.0	.160842 03	.163617 03	.167980 03	.171517 03	.174586 03	.177369 03	.179976 03	.182474 03	.184913 03	.187334 03
188.5	.161304 03	.164084 03	.168461 03	.172195 03	.175066 03	.177855 03	.180466 03	.182967 03	.185404 03	.187834 03
189.0	.161767 03	.164551 03	.168934 03	.172777 03	.175749 03	.178542 03	.181056 03	.183461 03	.185966 03	.188334 03
189.5	.162230 03	.165018 03	.169407 03	.173251 03	.176231 03	.178928 03	.181446 03	.183954 03	.186403 03	.188834 03
190.0	.162693 03	.165485 03	.169881 03	.173734 03	.176714 03	.179415 03	.181936 03	.184448 03	.186900 03	.189334 03
190.5	.163156 03	.165952 03	.170354 03	.174208 03	.177297 03	.180001 03	.182527 03	.185041 03	.187596 03	.189934 03
191.0	.163619 03	.166419 03	.170828 03	.174687 03	.177879 03	.180688 03	.183217 03	.185735 03	.188293 03	.190834 03
191.5	.164083 03	.166887 03	.171301 03	.175165 03	.178465 03	.181274 03	.183807 03	.186328 03	.188890 03	.191334 03
192.0	.164546 03	.167354 03	.171575 03	.175433 03	.178745 03	.181561 03	.184197 03	.186712 03	.189267 03	.191834 03
192.5	.165009 03	.167821 03	.172048 03	.175922 03	.179228 03	.182048 03	.184687 03	.187240 03	.189834 03	.192334 03
193.0	.165472 03	.168288 03	.172522 03	.176431 03	.179740 03	.182569 03	.185227 03	.187809 03	.190434 03	.192934 03
193.5	.165936 03	.168756 03	.173015 03	.176939 03	.180258 03	.183094 03	.185770 03	.188396 03	.191074 03	.193734 03
194.0	.166399 03	.169223 03	.173519 03	.177458 03	.180793 03	.183644 03	.186330 03	.188970 03	.191674 03	.194334 03
194.5	.166862 03	.169691 03	.174043 03	.178003 03	.181342 03	.184201 03	.186898 03	.189544 03	.192260 03	.194934 03
195.0	.167326 03	.170158 03	.174516 03	.178494 03	.181835 03	.184701 03	.187419 03	.190099 03	.192850 03	.195534 03
195.5	.167790 03	.170626 03	.175000 03	.179003 03	.182346 03	.185222 03	.187959 03	.190667 03	.193450 03	.196134 03
196.0	.168253 03	.171095 03	.175504 03	.179532 03	.182885 03	.185770 03	.188519 03	.191240 03	.194043 03	.196734 03
196.5	.168717 03	.171561 03	.176038 03	.180103 03	.183479 03	.186380 03	.189144 03	.191880 03	.194700 03	.197334 03
197.0	.169180 03	.172029 03	.176511 03	.180613 03	.183993 03	.186909 03	.189780 03	.192624 03	.195550 03	.198334 03
197.5	.169644 03	.172496 03	.176985 03	.181109 03	.184509 03	.187464 03	.190300 03	.193128 03	.196040 03	.198834 03
198.0	.170108 03	.172964 03	.177459 03	.181593 03	.184993 03	.187958 03	.190800 03	.193628 03	.196540 03	.199334 03
198.5	.170572 03	.173432 03	.177933 03	.182077 03	.185487 03	.188462 03	.191320 03	.194180 03	.197030 03	.199834 03
199.0	.171035 03	.173900 03	.178407 03	.182564 03	.185985 03	.188970 03	.191840 03	.194720 03	.197600 03	.200334 03
199.5	.171499 03	.174367 03	.178881 03	.183054 03	.186485 03	.189480 03	.192360 03	.195260 03	.198180 03	.201034 03
200.0	.171963 03	.174835 03	.179355 03	.183543 03	.186985 03	.190000 03	.192900 03	.195820 03	.198760 03	.201634 03
200.5	.172427 03	.175303 03	.179829 03	.184032 03	.187485 03	.190520 03	.193450 03	.196400 03	.199380 03	.202334 03
201.0	.172891 03	.175771 03	.180303 03	.184596 03	.188150 03	.191200 03	.194160 03	.197140 03	.200140 03	.203034 03
201.5	.173355 03	.176239 03	.180777 03	.185070 03	.188640 03	.191720 03	.194700 03	.197700 03	.200720 03	.203634 03
202.0	.173820 03	.176707 03	.181251 03	.185554 03	.189140 03	.192260 03	.195260 03	.198300 03	.201360 03	.204334 03
202.5	.174284 03	.177175 03	.181726 03	.186039 03	.189640 03	.192800 03	.195820 03	.198900 03	.201980 03	.204934 03
203.0	.174748 03	.177643 03	.182200 03	.186527 03	.190140 03	.193380 03	.196480 03	.199640 03	.202760 03	.205834 03
203.5	.175212 03	.178112 03	.182674 03	.187013 03	.190640 03	.193900 03	.197020 03	.200200 03	.203340 03	.206434 03
204.0	.175676 03	.178580 03	.183148 03	.187493 03	.191140 03	.194440 03	.197560 03	.200760 03	.203920 03	.207034 03
204.5	.176141 03	.179048 03	.183623 03	.187980 03	.191640 03	.194980 03	.198120 03	.201380 03	.204580 03	.207734 03
205.0	.176605 03	.179516 03	.184097 03	.188462 03	.192140 03	.195500 03	.198660 03	.201940 03	.205140 03	.208334 03
205.5	.177070 03	.179985 03	.184571 03	.188953 03	.192640 03	.196040 03	.199200 03	.202500 03	.205720 03	.208934 03
206.0	.177534 03	.180453 03	.185046 03	.189432 03	.193140 03	.196580 03	.199760 03	.203080 03	.206340 03	.209534 03
206.5	.177999 03	.180921 03	.185520 03	.189923 03	.193640 03	.197100 03	.200300 03	.203640 03	.206920 03	.210134 03
207.0	.178463 03	.181390 03	.185995 03	.190410 03	.194140 03	.197660 03	.201000 03	.204380 03	.207720 03	.211034 03
207.5	.178928 03	.181858 03	.186469 03	.190890 03	.194640 03	.198200 03	.201580 03	.204980 03	.208340 03	.211634 03
208.0	.179392 03	.182327 03	.186944 03	.191370 03	.195140 03	.198720 03	.202120 03	.205540 03	.208920 03	.212334 03
208.5	.179857 03	.182795 03	.187418 03	.191848 03	.195640 03	.199260 03	.202680 03	.206120 03	.209540 03	.212934 03
209.0	.180322 03	.183264 03	.187885 03	.192316 03	.196140 03	.199780 03	.203220 03	.206680 03	.210120 03	.213534 03
209.5	.180787 03	.183733 03	.188368 03	.192797 03	.196640 03	.200300 03	.203760 03	.207240 03	.210720 03	.214134 03
210.0	.181251 03	.184201 03	.188842 03	.193280 03	.197140 03	.200820 03	.204300 03	.207800 03	.211320 03	.214834 03
210.5	.181716 03	.184670 03	.189317 03	.193766 03	.197640 03	.201340 03	.204840 03	.208360 03	.211900 03	.215434 03
211.0	.182181 03	.185139 03	.189792 03	.194240 03	.198140 03	.201860 03	.205380 03	.208920 03	.212480 03	.216034 03
211.5	.182646 03	.185608 03	.190266 03	.194728 03	.198640 03	.202380 03	.205920 03	.209480 03	.213060 03	.216634 03
212.0	.183111 03	.186076 03	.190731 03	.195190 03	.199140 03	.202900 03	.206460 03	.210040 03	.213640 03	.217234 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of P and ν

ν	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
212.5	.13576 03	.106545 03	.191216 03	.194904 03	.190256 03	.204225 03	.204003 03	.206663 03	.209258 03	.211834 03
213.0	.184041 03	.107814 03	.191691 03	.195463 03	.190739 03	.201712 03	.204494 03	.207157 03	.209755 03	.212334 03
213.5	.184506 03	.107483 03	.192166 03	.195943 03	.191223 03	.202200 03	.204905 03	.207651 03	.210252 03	.212834 03
214.0	.184971 03	.107152 03	.192641 03	.196423 03	.191707 03	.202687 03	.205475 03	.208145 03	.210749 03	.213334 03
214.5	.185437 03	.106821 03	.193116 03	.196902 03	.200190 03	.203174 03	.205966 03	.208639 03	.211246 03	.213834 03
215.0	.185902 03	.106490 03	.193591 03	.197382 03	.200674 03	.203662 03	.206457 03	.209132 03	.211743 03	.214334 03
215.5	.186367 03	.106159 03	.194066 03	.197862 03	.201156 03	.204149 03	.206947 03	.209626 03	.212248 03	.214834 03
216.0	.186832 03	.105828 03	.194541 03	.198341 03	.201642 03	.204636 03	.207438 03	.210120 03	.212737 03	.215334 03
216.5	.187298 03	.105497 03	.195016 03	.198821 03	.202125 03	.205124 03	.207929 03	.210614 03	.213234 03	.215834 03
217.0	.187763 03	.105166 03	.195491 03	.199301 03	.202609 03	.205611 03	.206419 03	.211108 03	.213731 03	.216334 03
217.5	.188229 03	.104835 03	.195966 03	.199781 03	.203093 03	.206099 03	.208910 03	.211602 03	.214228 03	.216834 03
218.0	.188694 03	.104504 03	.196441 03	.200260 03	.203577 03	.206586 03	.209401 03	.212096 03	.214725 03	.217334 03
218.5	.189160 03	.104173 03	.196916 03	.200740 03	.204060 03	.207073 03	.209892 03	.212590 03	.215222 03	.217834 03
219.0	.189625 03	.103842 03	.197391 03	.201220 03	.204544 03	.207561 03	.210383 03	.213084 03	.215719 03	.218334 03
219.5	.190091 03	.103511 03	.197866 03	.201700 03	.205028 03	.208048 03	.210873 03	.213578 03	.216216 03	.218834 03
220.0	.190556 03	.103180 03	.198342 03	.202180 03	.205512 03	.208536 03	.211364 03	.214072 03	.216713 03	.219334 03
220.5	.191022 03	.102849 03	.198817 03	.202660 03	.205996 03	.209023 03	.211855 03	.214565 03	.217210 03	.219834 03
221.0	.191488 03	.102518 03	.199292 03	.203140 03	.206480 03	.209511 03	.212346 03	.214959 03	.217707 03	.220334 03
221.5	.191953 03	.102187 03	.199768 03	.203620 03	.206964 03	.209998 03	.212837 03	.215453 03	.218204 03	.220834 03
222.0	.192419 03	.101856 03	.200243 03	.204100 03	.207448 03	.210486 03	.213327 03	.216047 03	.218701 03	.221334 03
222.5	.192885 03	.101525 03	.200718 03	.204580 03	.207932 03	.210973 03	.213816 03	.216541 03	.219198 03	.221834 03
223.0	.193351 03	.101194 03	.201194 03	.205060 03	.208416 03	.211461 03	.214309 03	.217035 03	.219695 03	.222334 03
223.5	.193817 03	.100863 03	.201669 03	.205540 03	.208900 03	.211948 03	.214800 03	.217529 03	.220192 03	.222834 03
224.0	.194283 03	.100532 03	.202145 03	.206020 03	.209384 03	.212436 03	.215291 03	.218023 03	.220689 03	.223334 03
224.5	.194749 03	.100201 03	.202620 03	.206500 03	.209868 03	.212924 03	.215782 03	.218517 03	.221186 03	.223834 03
225.0	.195215 03	.999870 03	.203096 03	.206980 03	.210352 03	.213411 03	.216273 03	.219011 03	.221683 03	.224334 03
225.5	.195681 03	.999539 03	.203571 03	.207460 03	.210836 03	.213899 03	.216764 03	.219505 03	.222180 03	.224834 03
226.0	.196147 03	.999208 03	.204047 03	.207940 03	.211320 03	.214386 03	.217254 03	.219999 03	.222677 03	.225334 03
226.5	.196613 03	.998877 03	.204522 03	.208421 03	.211804 03	.214874 03	.217745 03	.220493 03	.223174 03	.225834 03
227.0	.197079 03	.998546 03	.204998 03	.208901 03	.212288 03	.215362 03	.218236 03	.220987 03	.223671 03	.226334 03
227.5	.197545 03	.998215 03	.205474 03	.209381 03	.212773 03	.215849 03	.218727 03	.221482 03	.224168 03	.226834 03
228.0	.198012 03	.997884 03	.205949 03	.209861 03	.213257 03	.216337 03	.219218 03	.221976 03	.224665 03	.227334 03
228.5	.198478 03	.997553 03	.206425 03	.210341 03	.213741 03	.216825 03	.219709 03	.222470 03	.225162 03	.227834 03
229.0	.198944 03	.997222 03	.206901 03	.210822 03	.214225 03	.217313 03	.220200 03	.222964 03	.225659 03	.228334 03
229.5	.199410 03	.996891 03	.207377 03	.211302 03	.214709 03	.217800 03	.220691 03	.223458 03	.226157 03	.228834 03
230.0	.199877 03	.996560 03	.207852 03	.211782 03	.215194 03	.218288 03	.221182 03	.223952 03	.226654 03	.229334 03
230.5	.200343 03	.996229 03	.208328 03	.212263 03	.215678 03	.218776 03	.221673 03	.224446 03	.227151 03	.229834 03
231.0	.200810 03	.995898 03	.208804 03	.212743 03	.216162 03	.219264 03	.222164 03	.224940 03	.227648 03	.230334 03
231.5	.201276 03	.995567 03	.209280 03	.213224 03	.216646 03	.219751 03	.222655 03	.225434 03	.228145 03	.230834 03
232.0	.201743 03	.995236 03	.209756 03	.213704 03	.217131 03	.220239 03	.223146 03	.225928 03	.228642 03	.231334 03
232.5	.202209 03	.994905 03	.210232 03	.214184 03	.217615 03	.220727 03	.223637 03	.226422 03	.229139 03	.231834 03
233.0	.202676 03	.994574 03	.210708 03	.214665 03	.218099 03	.221215 03	.224128 03	.226916 03	.229636 03	.232334 03
233.5	.203143 03	.994243 03	.211184 03	.215145 03	.218584 03	.221703 03	.224619 03	.227411 03	.230133 03	.232834 03
234.0	.203609 03	.993912 03	.211660 03	.215626 03	.219068 03	.222191 03	.225110 03	.227905 03	.230630 03	.233334 03
234.5	.204076 03	.993581 03	.212136 03	.216106 03	.219553 03	.222678 03	.225602 03	.228399 03	.231127 03	.233834 03
235.0	.204543 03	.993250 03	.212612 03	.216587 03	.220037 03	.223166 03	.226093 03	.228893 03	.231624 03	.234334 03
235.5	.205009 03	.992919 03	.213088 03	.217068 03	.220521 03	.223654 03	.226584 03	.229387 03	.232122 03	.234834 03
236.0	.205476 03	.992588 03	.213564 03	.217548 03	.221006 03	.224142 03	.227075 03	.229881 03	.232619 03	.235334 03
236.5	.205943 03	.992257 03	.214040 03	.218029 03	.221490 03	.224630 03	.227566 03	.230375 03	.233116 03	.235834 03
237.0	.206410 03	.991926 03	.214516 03	.218509 03	.221975 03	.225118 03	.228057 03	.230870 03	.233613 03	.236334 03

r/p	.925000	.900000	.850000	.800000	.750000	.700000	.600000	.550000	.500000
237.5	.206877 03	.210032 03	.214992 03	.216990 03	.222459 03	.225606 03	.231364 03	.234110 03	.236034 03
238.0	.207344 03	.210503 03	.215469 03	.219471 03	.222944 03	.226094 03	.231858 03	.234607 03	.237334 03
238.5	.207811 03	.210974 03	.215785 03	.219791 03	.223268 03	.226582 03	.232352 03	.235104 03	.237834 03
239.0	.208278 03	.211444 03	.216241 03	.220432 03	.223913 03	.227070 03	.232846 03	.235601 03	.238334 03
239.5	.208745 03	.211915 03	.216697 03	.220913 03	.224397 03	.227558 03	.233341 03	.236098 03	.238834 03
240.0	.209212 03	.212386 03	.217174 03	.221394 03	.224882 03	.228046 03	.233835 03	.236596 03	.239334 03
240.5	.209679 03	.212856 03	.217650 03	.221874 03	.225367 03	.228534 03	.234329 03	.237093 03	.239834 03
241.0	.210146 03	.213327 03	.218136 03	.222355 03	.225851 03	.229022 03	.234823 03	.237590 03	.240334 03
241.5	.210613 03	.213798 03	.218603 03	.222836 03	.226336 03	.229510 03	.235317 03	.238087 03	.240834 03
242.0	.211081 03	.214269 03	.219079 03	.223317 03	.226820 03	.229998 03	.235812 03	.238584 03	.241334 03
242.5	.211548 03	.214740 03	.219555 03	.223798 03	.227305 03	.230486 03	.236306 03	.239081 03	.241834 03
243.0	.212015 03	.215210 03	.220032 03	.224279 03	.227790 03	.230974 03	.236800 03	.239578 03	.242334 03
243.5	.212483 03	.215681 03	.220508 03	.224759 03	.228274 03	.231462 03	.237294 03	.240076 03	.242834 03
244.0	.212950 03	.216152 03	.221085 03	.225240 03	.228759 03	.231950 03	.237789 03	.240573 03	.243334 03
244.5	.213417 03	.216623 03	.221561 03	.225721 03	.229244 03	.232438 03	.238283 03	.241070 03	.243834 03
245.0	.213885 03	.217094 03	.222038 03	.226202 03	.229729 03	.232927 03	.238777 03	.241567 03	.244334 03
245.5	.214352 03	.217565 03	.222515 03	.226683 03	.230213 03	.233415 03	.239271 03	.242064 03	.244834 03
246.0	.214820 03	.218036 03	.223091 03	.227264 03	.230798 03	.233993 03	.239856 03	.242661 03	.245334 03
246.5	.215287 03	.218507 03	.223568 03	.227745 03	.231283 03	.234491 03	.240360 03	.243058 03	.245834 03
247.0	.215755 03	.218979 03	.224044 03	.228226 03	.231768 03	.234979 03	.240854 03	.243556 03	.246334 03
247.5	.216222 03	.219450 03	.224521 03	.228707 03	.232252 03	.235467 03	.241349 03	.244053 03	.246834 03
248.0	.216690 03	.219921 03	.225000 03	.229190 03	.232737 03	.235956 03	.241833 03	.244550 03	.247334 03
248.5	.217158 03	.220392 03	.225474 03	.229669 03	.233222 03	.236443 03	.242317 03	.245033 03	.247834 03
249.0	.217625 03	.220863 03	.225951 03	.230151 03	.233707 03	.236932 03	.242803 03	.245524 03	.248334 03
249.5	.218093 03	.221335 03	.226428 03	.230632 03	.234192 03	.237428 03	.243290 03	.246013 03	.248834 03
250.0	.218561 03	.221806 03	.226905 03	.231113 03	.234677 03	.237923 03	.243780 03	.246509 03	.249334 03
250.5	.219029 03	.222277 03	.227382 03	.231624 03	.235192 03	.238443 03	.244271 03	.247003 03	.249834 03
251.0	.219497 03	.222749 03	.227858 03	.232136 03	.235707 03	.238963 03	.244760 03	.247503 03	.250334 03
251.5	.219964 03	.223220 03	.228335 03	.232646 03	.236222 03	.239479 03	.245253 03	.248003 03	.250834 03
252.0	.220432 03	.223691 03	.228812 03	.233160 03	.236746 03	.239996 03	.245780 03	.248533 03	.251334 03
252.5	.220900 03	.224163 03	.229289 03	.233619 03	.237208 03	.240470 03	.246252 03	.249025 03	.251834 03
253.0	.221368 03	.224634 03	.229766 03	.234080 03	.237673 03	.240938 03	.246722 03	.249522 03	.252334 03
253.5	.221836 03	.225106 03	.230243 03	.234581 03	.238179 03	.241450 03	.247241 03	.250049 03	.252834 03
254.0	.222304 03	.225577 03	.230720 03	.235063 03	.238666 03	.241943 03	.247741 03	.250556 03	.253334 03
254.5	.222772 03	.226049 03	.231197 03	.235544 03	.239151 03	.242433 03	.248241 03	.251063 03	.253834 03
255.0	.223240 03	.226520 03	.231674 03	.236025 03	.239636 03	.242923 03	.248741 03	.251571 03	.254334 03
255.5	.223708 03	.226992 03	.232151 03	.236507 03	.240123 03	.243416 03	.249241 03	.252068 03	.254834 03
256.0	.224177 03	.227464 03	.232628 03	.236988 03	.240603 03	.243903 03	.249741 03	.252575 03	.255334 03
256.5	.224645 03	.227935 03	.233105 03	.237469 03	.241092 03	.244393 03	.250241 03	.253062 03	.255834 03
257.0	.225113 03	.228407 03	.233582 03	.237951 03	.241637 03	.244945 03	.250803 03	.253630 03	.256334 03
257.5	.225581 03	.228879 03	.234059 03	.238432 03	.242182 03	.245503 03	.251366 03	.254197 03	.256834 03
258.0	.226049 03	.229351 03	.234536 03	.238914 03	.242737 03	.246062 03	.251930 03	.254771 03	.257334 03
258.5	.226518 03	.229822 03	.235014 03	.239395 03	.243262 03	.246593 03	.252419 03	.255260 03	.257834 03
259.0	.226986 03	.230294 03	.235491 03	.239877 03	.243757 03	.247093 03	.252966 03	.255807 03	.258334 03
259.5	.227454 03	.230766 03	.235968 03	.240380 03	.244273 03	.247613 03	.253419 03	.256260 03	.258834 03
260.0	.227923 03	.231238 03	.236445 03	.240994 03	.244893 03	.248233 03	.254119 03	.256960 03	.259334 03
260.5	.228391 03	.231710 03	.236922 03	.241612 03	.245517 03	.248857 03	.254741 03	.257582 03	.260334 03
261.0	.228860 03	.232182 03	.237400 03	.242333 03	.246243 03	.249583 03	.255466 03	.258307 03	.260834 03
261.5	.229328 03	.232653 03	.237877 03	.243084 03	.247003 03	.250343 03	.256226 03	.259067 03	.261334 03
262.0	.229797 03	.233125 03	.238354 03	.243856 03	.247783 03	.251123 03	.257006 03	.259847 03	.261834 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000	.500000
262.5	.230265 03	.233597 03	.238832 03	.243047 03	.246704 03	.250019 03	.253117 03	.256080 03	.258969 03	.261834 03	.264634 03
263.0	.230734 03	.234069 03	.239309 03	.243529 03	.247169 03	.250507 03	.253600 03	.256574 03	.259466 03	.262334 03	.265134 03
263.5	.231202 03	.234542 03	.239786 03	.244011 03	.247674 03	.251006 03	.254100 03	.257069 03	.259964 03	.262834 03	.265634 03
264.0	.231671 03	.235014 03	.240264 03	.244492 03	.248168 03	.251493 03	.254591 03	.257563 03	.260461 03	.263334 03	.266134 03
264.5	.232140 03	.235486 03	.240741 03	.244974 03	.248645 03	.251973 03	.255083 03	.258058 03	.260958 03	.263834 03	.266634 03
265.0	.232608 03	.235958 03	.241219 03	.245456 03	.249130 03	.252461 03	.255575 03	.258552 03	.261455 03	.264334 03	.267134 03
265.5	.233077 03	.236430 03	.241696 03	.245937 03	.249616 03	.252950 03	.256066 03	.259047 03	.261953 03	.264834 03	.267634 03
266.0	.233546 03	.236902 03	.242174 03	.246419 03	.250101 03	.253439 03	.256558 03	.259541 03	.262450 03	.265334 03	.268134 03
266.5	.234015 03	.237374 03	.242651 03	.246901 03	.250586 03	.253927 03	.257049 03	.260036 03	.262947 03	.265834 03	.268634 03
267.0	.234483 03	.237847 03	.243129 03	.247383 03	.251072 03	.254416 03	.257541 03	.260530 03	.263445 03	.266334 03	.269134 03
267.5	.234952 03	.238319 03	.243566 03	.247824 03	.251557 03	.254904 03	.258033 03	.261025 03	.263942 03	.266834 03	.269634 03
268.0	.235421 03	.238791 03	.244044 03	.248306 03	.252042 03	.255393 03	.258524 03	.261519 03	.264439 03	.267334 03	.270134 03
268.5	.235890 03	.239263 03	.244561 03	.248828 03	.252582 03	.255932 03	.259060 03	.262058 03	.264976 03	.267876 03	.270676 03
269.0	.236359 03	.239736 03	.245039 03	.249310 03	.253013 03	.256363 03	.259508 03	.262508 03	.265434 03	.268334 03	.271134 03
269.5	.236828 03	.240208 03	.245517 03	.249792 03	.253499 03	.256859 03	.259999 03	.263003 03	.265931 03	.268834 03	.271634 03
270.0	.237297 03	.240680 03	.245994 03	.250274 03	.253984 03	.257348 03	.260491 03	.263498 03	.266428 03	.269334 03	.272134 03
270.5	.237766 03	.241153 03	.246472 03	.250755 03	.254470 03	.257837 03	.260983 03	.263992 03	.266926 03	.269834 03	.272634 03
271.0	.238235 03	.241625 03	.246950 03	.251237 03	.254955 03	.258325 03	.261475 03	.264487 03	.267423 03	.270334 03	.273134 03
271.5	.238704 03	.242098 03	.247427 03	.251719 03	.255441 03	.258814 03	.261966 03	.264981 03	.267920 03	.270834 03	.273634 03
272.0	.239173 03	.242570 03	.247905 03	.252201 03	.255926 03	.259303 03	.262458 03	.265476 03	.268417 03	.271334 03	.274134 03
272.5	.239642 03	.243043 03	.248383 03	.252683 03	.256412 03	.259791 03	.262950 03	.265970 03	.268915 03	.271834 03	.274634 03
273.0	.240111 03	.243515 03	.248861 03	.253165 03	.256897 03	.260280 03	.263441 03	.266465 03	.269412 03	.272334 03	.275134 03
273.5	.240580 03	.243988 03	.249339 03	.253647 03	.257383 03	.260769 03	.263933 03	.266959 03	.269909 03	.272834 03	.275634 03
274.0	.241050 03	.244466 03	.249816 03	.254129 03	.257868 03	.261258 03	.264425 03	.267454 03	.270407 03	.273334 03	.276134 03
274.5	.241519 03	.244933 03	.250294 03	.254611 03	.258354 03	.261747 03	.264917 03	.267949 03	.270904 03	.273834 03	.276634 03
275.0	.241988 03	.245406 03	.250772 03	.255093 03	.258840 03	.262235 03	.265409 03	.268443 03	.271401 03	.274334 03	.277134 03
275.5	.242457 03	.245878 03	.251250 03	.255575 03	.259325 03	.262724 03	.265900 03	.268938 03	.271899 03	.274834 03	.277634 03
276.0	.242926 03	.246351 03	.251728 03	.256057 03	.259811 03	.263213 03	.266392 03	.269432 03	.272396 03	.275334 03	.278134 03
276.5	.243396 03	.246824 03	.252206 03	.256539 03	.260296 03	.263702 03	.266884 03	.269927 03	.272893 03	.275834 03	.278634 03
277.0	.243866 03	.247296 03	.252684 03	.257021 03	.260782 03	.264191 03	.267376 03	.270422 03	.273391 03	.276334 03	.279134 03
277.5	.244335 03	.247769 03	.253162 03	.257503 03	.261268 03	.264679 03	.267867 03	.270916 03	.273888 03	.276834 03	.279634 03
278.0	.244804 03	.248242 03	.253640 03	.257986 03	.261753 03	.265168 03	.268359 03	.271411 03	.274385 03	.277334 03	.280134 03
278.5	.245274 03	.248715 03	.254118 03	.258468 03	.262239 03	.265657 03	.268851 03	.271905 03	.274883 03	.277834 03	.280634 03
279.0	.245743 03	.249188 03	.254596 03	.258950 03	.262725 03	.266146 03	.269343 03	.272400 03	.275380 03	.278334 03	.281134 03
279.5	.246213 03	.249660 03	.255074 03	.259432 03	.263211 03	.266635 03	.269835 03	.272895 03	.275877 03	.278834 03	.281634 03
280.0	.246682 03	.250133 03	.255552 03	.259914 03	.263696 03	.267124 03	.270327 03	.273389 03	.276375 03	.279334 03	.282134 03
280.5	.247152 03	.250606 03	.256030 03	.260396 03	.264182 03	.267613 03	.270818 03	.273884 03	.276872 03	.279834 03	.282634 03
281.0	.247622 03	.251079 03	.256508 03	.260879 03	.264668 03	.268102 03	.271310 03	.274379 03	.277369 03	.280334 03	.283134 03
281.5	.248091 03	.251552 03	.256986 03	.261361 03	.265153 03	.268591 03	.271802 03	.274873 03	.277867 03	.280834 03	.283634 03
282.0	.248561 03	.252025 03	.257464 03	.261843 03	.265639 03	.269080 03	.272294 03	.275368 03	.278364 03	.281334 03	.284134 03
282.5	.249031 03	.252498 03	.257943 03	.262325 03	.266125 03	.269569 03	.272786 03	.275863 03	.278861 03	.281834 03	.284634 03
283.0	.249500 03	.252971 03	.258421 03	.262808 03	.266611 03	.270057 03	.273278 03	.276357 03	.279359 03	.282334 03	.285134 03
283.5	.249970 03	.253444 03	.258899 03	.263290 03	.267097 03	.270546 03	.273770 03	.276852 03	.279856 03	.282834 03	.285634 03
284.0	.250440 03	.253917 03	.259377 03	.263772 03	.267582 03	.271035 03	.274262 03	.277347 03	.280353 03	.283334 03	.286134 03
284.5	.250909 03	.254390 03	.259855 03	.264255 03	.268068 03	.271524 03	.274754 03	.277841 03	.280851 03	.283834 03	.286634 03
285.0	.251379 03	.254864 03	.260334 03	.264737 03	.268554 03	.272013 03	.275245 03	.278336 03	.281348 03	.284334 03	.287134 03
285.5	.251849 03	.255337 03	.260812 03	.265219 03	.269040 03	.272502 03	.275737 03	.278831 03	.281845 03	.284834 03	.287634 03
286.0	.252319 03	.255810 03	.261290 03	.265702 03	.269526 03	.272991 03	.276229 03	.279325 03	.282343 03	.285334 03	.288134 03
286.5	.252789 03	.256283 03	.261769 03	.266184 03	.270012 03	.273480 03	.276721 03	.279820 03	.282840 03	.285834 03	.288634 03
287.0	.253259 03	.256756 03	.262247 03	.266666 03	.270498 03	.273970 03	.277213 03	.280315 03	.283338 03	.286334 03	.289134 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν	.92500	.90000	.85000	.80000	.75000	.70000	.65000	.60000	.55000	.50000
287.5	.253729 03	.257229 03	.262725 03	.267149 03	.270944 03	.274459 03	.277705 03	.280809 03	.283335 03	.285834 03
288.0	.254199 03	.257703 03	.263204 03	.267631 03	.271470 03	.274998 03	.278197 03	.281304 03	.283832 03	.286334 03
288.5	.254669 03	.258176 03	.263682 03	.268114 03	.271955 03	.275483 03	.278689 03	.281799 03	.284327 03	.286834 03
289.0	.255139 03	.258649 03	.264160 03	.268596 03	.272441 03	.275969 03	.279181 03	.282294 03	.284827 03	.287334 03
289.5	.255609 03	.259123 03	.264639 03	.269079 03	.272927 03	.276455 03	.279673 03	.282788 03	.285324 03	.287834 03
290.0	.256079 03	.259596 03	.265117 03	.269556 03	.273413 03	.276941 03	.280165 03	.283283 03	.285822 03	.288334 03
290.5	.256549 03	.260069 03	.265596 03	.270034 03	.273899 03	.277427 03	.280657 03	.283778 03	.286322 03	.288834 03
291.0	.257019 03	.260543 03	.266074 03	.270526 03	.274385 03	.277912 03	.281149 03	.284273 03	.286817 03	.289334 03
291.5	.257489 03	.261016 03	.266553 03	.271009 03	.274871 03	.278398 03	.281641 03	.284767 03	.287314 03	.289834 03
292.0	.257959 03	.261490 03	.267031 03	.271491 03	.275357 03	.278886 03	.282133 03	.285262 03	.287811 03	.290334 03
292.5	.258430 03	.261963 03	.267510 03	.271974 03	.275843 03	.279370 03	.282625 03	.285757 03	.288309 03	.290834 03
293.0	.258900 03	.262437 03	.267988 03	.272457 03	.276329 03	.279859 03	.283117 03	.286252 03	.288809 03	.291334 03
293.5	.259370 03	.262910 03	.268467 03	.272939 03	.276815 03	.280348 03	.283609 03	.286746 03	.289304 03	.291834 03
294.0	.259840 03	.263384 03	.268948 03	.273422 03	.277302 03	.280837 03	.284101 03	.287241 03	.289801 03	.292334 03
294.5	.260311 03	.263857 03	.269424 03	.273904 03	.277788 03	.281326 03	.284593 03	.287736 03	.290298 03	.292834 03
295.0	.260781 03	.264331 03	.269903 03	.274387 03	.278274 03	.281815 03	.285085 03	.288231 03	.290796 03	.293334 03
295.5	.261251 03	.264804 03	.270381 03	.274876 03	.278760 03	.282305 03	.285577 03	.288725 03	.291293 03	.293834 03
296.0	.261722 03	.265278 03	.270860 03	.275352 03	.279246 03	.282794 03	.286069 03	.289220 03	.291793 03	.294334 03
296.5	.262192 03	.265752 03	.271339 03	.275835 03	.279732 03	.283283 03	.286561 03	.289715 03	.292288 03	.294834 03
297.0	.262663 03	.266225 03	.271817 03	.276318 03	.280218 03	.283772 03	.287054 03	.290210 03	.292785 03	.295334 03
297.5	.263133 03	.266699 03	.272296 03	.276800 03	.280704 03	.284261 03	.287546 03	.290705 03	.293283 03	.295834 03
298.0	.263603 03	.267173 03	.272775 03	.277283 03	.281191 03	.284751 03	.288036 03	.291199 03	.293780 03	.296334 03
298.5	.264074 03	.267647 03	.273254 03	.277766 03	.281677 03	.285240 03	.288530 03	.291694 03	.294278 03	.296834 03
299.0	.264545 03	.268120 03	.273732 03	.278249 03	.282163 03	.285729 03	.289022 03	.292189 03	.294775 03	.297334 03
299.5	.265015 03	.268594 03	.274211 03	.278732 03	.282649 03	.286218 03	.289514 03	.292684 03	.295273 03	.297834 03
300.0	.265486 03	.269068 03	.274690 03	.279214 03	.283135 03	.286708 03	.290006 03	.293179 03	.295773 03	.298334 03
300.5	.265956 03	.269542 03	.275169 03	.279697 03	.283622 03	.287177 03	.290480 03	.293673 03	.296276 03	.298834 03
301.0	.266427 03	.270016 03	.275648 03	.280180 03	.284108 03	.287666 03	.290990 03	.294180 03	.296785 03	.299334 03
301.5	.266898 03	.270489 03	.276127 03	.280663 03	.284594 03	.288156 03	.291483 03	.294663 03	.297262 03	.299834 03
302.0	.267368 03	.270963 03	.276606 03	.281146 03	.285080 03	.288645 03	.291975 03	.295158 03	.298260 03	.300834 03
302.5	.267839 03	.271437 03	.277084 03	.281628 03	.285567 03	.289134 03	.292467 03	.295653 03	.298757 03	.301334 03
303.0	.268310 03	.271911 03	.277563 03	.282111 03	.286053 03	.289624 03	.292959 03	.296148 03	.299255 03	.302334 03
303.5	.268780 03	.272385 03	.278042 03	.282594 03	.286539 03	.290113 03	.293451 03	.296642 03	.299752 03	.302834 03
304.0	.269251 03	.272859 03	.278521 03	.283077 03	.287025 03	.290602 03	.293943 03	.297137 03	.300250 03	.303334 03
304.5	.269722 03	.273333 03	.279000 03	.283560 03	.287512 03	.291092 03	.294436 03	.297632 03	.300747 03	.303834 03
305.0	.270193 03	.273807 03	.279479 03	.284043 03	.287998 03	.291581 03	.294928 03	.298127 03	.301244 03	.304334 03
305.5	.270664 03	.274281 03	.279958 03	.284526 03	.288484 03	.292070 03	.295420 03	.298622 03	.301742 03	.304834 03
306.0	.271134 03	.274755 03	.280437 03	.285009 03	.288971 03	.292560 03	.295912 03	.299117 03	.302239 03	.305334 03
306.5	.271605 03	.275229 03	.280916 03	.285492 03	.289457 03	.293049 03	.296404 03	.299612 03	.302737 03	.305834 03
307.0	.272076 03	.275703 03	.281395 03	.285975 03	.289943 03	.293539 03	.296897 03	.300107 03	.303234 03	.306334 03
307.5	.272547 03	.276178 03	.281874 03	.286456 03	.290430 03	.294028 03	.297389 03	.300601 03	.303732 03	.306834 03
308.0	.273018 03	.276652 03	.282353 03	.286941 03	.290916 03	.294517 03	.297881 03	.301096 03	.304229 03	.307334 03
308.5	.273489 03	.277126 03	.282833 03	.287424 03	.291403 03	.295007 03	.298373 03	.301591 03	.304727 03	.307834 03
309.0	.273960 03	.277600 03	.283312 03	.287907 03	.291889 03	.295496 03	.298865 03	.302086 03	.305224 03	.308334 03
309.5	.274431 03	.278074 03	.283791 03	.288390 03	.292375 03	.295986 03	.299358 03	.302581 03	.305722 03	.308834 03
310.0	.274902 03	.278548 03	.284270 03	.288873 03	.292862 03	.296475 03	.299850 03	.303076 03	.306219 03	.309334 03
310.5	.275373 03	.279023 03	.284749 03	.289356 03	.293348 03	.296965 03	.300342 03	.303571 03	.306717 03	.309834 03
311.0	.275844 03	.279497 03	.285228 03	.289839 03	.293835 03	.297454 03	.300834 03	.304066 03	.307214 03	.310334 03
311.5	.276316 03	.279971 03	.285708 03	.290322 03	.294321 03	.297944 03	.301327 03	.304561 03	.307712 03	.310834 03
312.0	.276787 03	.280446 03	.286187 03	.290806 03	.294808 03	.298433 03	.301819 03	.305056 03	.308209 03	.311334 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.810000	.750000	.700000	.650000	.600000	.550000	.500000
312.5	.272258 03	.283920 03	.286666 03	.291269 03	.295294 03	.298923 03	.302311 03	.305551 03	.308706 03	.311834 03
313.0	.277720 03	.283394 03	.287145 03	.291772 03	.295761 03	.299412 03	.302804 03	.306045 03	.309204 03	.312334 03
313.5	.278200 03	.283569 03	.287625 03	.292255 03	.296267 03	.299902 03	.303296 03	.306540 03	.309701 03	.312834 03
314.0	.278672 03	.283833 03	.288104 03	.292738 03	.296754 03	.300391 03	.303788 03	.307030 03	.310199 03	.313334 03
314.5	.279143 03	.284117 03	.288583 03	.293221 03	.297240 03	.300881 03	.304280 03	.307530 03	.310696 03	.313834 03
315.0	.279614 03	.284592 03	.289162 03	.293805 03	.297823 03	.301468 03	.304873 03	.308120 03	.311294 03	.314434 03
315.5	.280085 03	.285066 03	.289732 03	.294480 03	.298500 03	.302150 03	.305555 03	.308800 03	.311991 03	.315134 03
316.0	.280556 03	.285539 03	.290201 03	.294951 03	.298970 03	.302620 03	.306025 03	.309270 03	.312461 03	.315604 03
316.5	.281026 03	.286011 03	.290671 03	.295423 03	.299442 03	.303092 03	.306500 03	.309745 03	.312936 03	.316080 03
317.0	.281499 03	.286486 03	.291146 03	.295899 03	.299918 03	.303568 03	.307073 03	.310310 03	.313501 03	.316646 03
317.5	.281971 03	.286960 03	.291621 03	.296375 03	.300394 03	.304044 03	.307550 03	.310787 03	.313978 03	.317124 03
318.0	.282442 03	.287433 03	.292094 03	.296849 03	.300868 03	.304518 03	.308025 03	.311262 03	.314453 03	.317600 03
318.5	.282914 03	.287907 03	.292568 03	.297323 03	.301342 03	.305000 03	.308507 03	.311744 03	.314935 03	.318082 03
319.0	.283385 03	.288380 03	.293041 03	.297796 03	.301815 03	.305473 03	.308980 03	.312217 03	.315408 03	.318554 03
319.5	.283857 03	.288853 03	.293514 03	.298269 03	.302288 03	.305946 03	.309453 03	.312690 03	.315881 03	.319027 03
320.0	.284328 03	.289325 03	.293986 03	.298741 03	.302760 03	.306418 03	.309925 03	.313162 03	.316353 03	.319500 03
320.5	.284800 03	.289807 03	.294468 03	.299223 03	.303242 03	.306900 03	.310407 03	.313644 03	.316835 03	.319982 03
321.0	.285271 03	.290278 03	.294939 03	.299694 03	.303713 03	.307371 03	.310878 03	.314115 03	.317306 03	.320452 03
321.5	.285743 03	.290750 03	.295411 03	.300166 03	.304185 03	.307843 03	.311350 03	.314587 03	.317778 03	.320924 03
322.0	.286214 03	.291221 03	.295882 03	.300637 03	.304656 03	.308314 03	.311821 03	.315058 03	.318249 03	.321400 03
322.5	.286686 03	.291693 03	.296354 03	.301109 03	.305128 03	.308786 03	.312293 03	.315530 03	.318721 03	.321872 03
323.0	.287158 03	.292165 03	.296826 03	.301581 03	.305600 03	.309258 03	.312765 03	.316002 03	.319193 03	.322344 03
323.5	.287629 03	.292636 03	.297297 03	.302052 03	.306071 03	.309729 03	.313236 03	.316473 03	.319664 03	.322815 03
324.0	.288101 03	.293108 03	.297769 03	.302524 03	.306543 03	.310201 03	.313708 03	.316945 03	.320136 03	.323307 03
324.5	.288573 03	.293580 03	.298241 03	.303036 03	.307055 03	.310713 03	.314220 03	.317457 03	.320648 03	.323819 03
325.0	.289045 03	.294052 03	.298713 03	.303468 03	.307487 03	.311145 03	.314652 03	.317889 03	.321080 03	.324251 03
325.5	.289516 03	.294523 03	.299184 03	.303939 03	.307958 03	.311616 03	.315123 03	.318360 03	.321551 03	.324722 03
326.0	.289988 03	.294995 03	.299656 03	.304411 03	.308430 03	.312088 03	.315595 03	.318832 03	.322023 03	.325194 03
326.5	.290460 03	.295467 03	.300128 03	.304883 03	.308902 03	.312560 03	.316067 03	.319304 03	.322495 03	.325666 03
327.0	.290932 03	.295939 03	.300600 03	.305355 03	.309374 03	.313032 03	.316539 03	.319776 03	.322967 03	.326138 03
327.5	.291404 03	.296411 03	.301072 03	.305827 03	.309846 03	.313504 03	.317011 03	.320248 03	.323439 03	.326610 03
328.0	.291875 03	.296882 03	.301543 03	.306298 03	.310317 03	.313975 03	.317482 03	.320719 03	.323910 03	.327081 03
328.5	.292347 03	.297354 03	.302015 03	.306770 03	.310789 03	.314447 03	.317954 03	.321191 03	.324382 03	.327553 03
329.0	.292819 03	.297826 03	.302487 03	.307242 03	.311261 03	.314919 03	.318426 03	.321663 03	.324854 03	.328025 03
329.5	.293291 03	.298298 03	.302959 03	.307714 03	.311733 03	.315391 03	.318900 03	.322137 03	.325328 03	.328499 03
330.0	.293763 03	.298770 03	.303431 03	.308186 03	.312205 03	.315863 03	.319372 03	.322609 03	.325800 03	.328971 03
330.5	.294235 03	.299242 03	.303903 03	.308658 03	.312677 03	.316335 03	.319844 03	.323081 03	.326272 03	.329443 03
331.0	.294707 03	.299714 03	.304375 03	.309130 03	.313149 03	.316807 03	.320316 03	.323553 03	.326744 03	.329915 03
331.5	.295179 03	.299786 03	.304447 03	.309202 03	.313221 03	.316879 03	.320388 03	.323625 03	.326816 03	.330007 03
332.0	.295651 03	.300258 03	.304919 03	.309674 03	.313693 03	.317351 03	.320860 03	.324097 03	.327288 03	.330469 03
332.5	.296123 03	.300730 03	.305391 03	.310146 03	.314165 03	.317823 03	.321332 03	.324569 03	.327760 03	.331031 03
333.0	.296595 03	.301202 03	.305863 03	.310618 03	.314637 03	.318295 03	.321804 03	.325041 03	.328232 03	.331503 03
333.5	.297067 03	.301674 03	.306335 03	.311090 03	.315109 03	.318767 03	.322276 03	.325513 03	.328704 03	.332005 03
334.0	.297539 03	.302146 03	.306807 03	.311562 03	.315581 03	.319239 03	.322748 03	.325985 03	.329176 03	.332507 03
334.5	.298011 03	.302618 03	.307279 03	.312034 03	.316053 03	.319711 03	.323220 03	.326457 03	.329648 03	.333009 03
335.0	.298484 03	.303091 03	.307752 03	.312507 03	.316526 03	.320184 03	.323693 03	.326930 03	.330121 03	.333623 03
335.5	.298956 03	.303563 03	.308224 03	.312972 03	.316991 03	.320649 03	.324158 03	.327395 03	.330586 03	.334107 03
336.0	.299428 03	.304035 03	.308696 03	.313437 03	.317456 03	.321114 03	.324623 03	.327860 03	.331051 03	.334673 03
336.5	.299900 03	.304507 03	.309168 03	.313902 03	.317921 03	.321579 03	.325088 03	.328325 03	.331516 03	.335197 03
337.0	.300373 03	.304980 03	.309641 03	.314302 03	.318321 03	.321979 03	.325488 03	.328725 03	.331916 03	.335607 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν	.92500	.90000	.85000	.80000	.75000	.70000	.60000	.55000	.50000
337.5	308845 03	304662 03	310640 03	315462 03	319632 03	323408 03	326933 03	330302 03	333683 03
338.0	301317 03	305137 03	311129 03	315946 03	320119 03	323898 03	327425 03	330797 03	334081 03
338.5	301789 03	305613 03	311609 03	316430 03	320606 03	324387 03	327918 03	331292 03	334578 03
339.0	302262 03	306088 03	312089 03	316914 03	321093 03	324877 03	328411 03	331707 03	335076 03
339.5	302734 03	306563 03	312569 03	317398 03	321580 03	325367 03	328903 03	332282 03	335573 03
340.0	303207 03	307039 03	313049 03	317881 03	322067 03	325857 03	329396 03	332777 03	336071 03
340.5	303679 03	307514 03	313529 03	318365 03	322554 03	326347 03	329888 03	333272 03	336569 03
341.0	304151 03	307990 03	314009 03	318849 03	323041 03	326837 03	330381 03	333768 03	337066 03
341.5	304624 02	308465 03	314489 03	319333 03	323528 03	327327 03	330874 03	334263 03	337564 03
342.0	305096 03	308940 03	314969 03	319817 03	324015 03	327817 03	331366 03	334758 03	338061 03
342.5	305569 03	309416 03	315450 03	320301 03	324502 03	328307 03	331859 03	335253 03	338559 03
343.0	306041 03	309891 03	315930 03	320785 03	324990 03	328797 03	332352 03	335748 03	339057 03
343.5	306514 03	310367 03	316410 03	321269 03	325477 03	329287 03	332844 03	336243 03	339554 03
344.0	306986 03	310843 03	316890 03	321753 03	325964 03	329777 03	333337 03	336739 03	340052 03
344.5	307459 03	311318 03	317370 03	322237 03	326451 03	330267 03	333830 03	337234 03	340549 03
345.0	307931 03	311794 03	317851 03	322721 03	326938 03	330757 03	334322 03	337729 03	341047 03
345.5	308404 02	312269 03	318331 03	323204 03	327425 03	331247 03	334815 03	338224 03	341545 03
346.0	308876 03	312745 03	318811 03	323688 03	327912 03	331737 03	335307 03	338719 03	342042 03
346.5	309349 03	313220 03	319291 03	324172 03	328400 03	332227 03	335800 03	339214 03	342540 03
347.0	309822 03	313696 03	319772 03	324656 03	328887 03	332717 03	336293 03	339710 03	343037 03
347.5	310294 03	314172 03	320252 03	325140 03	329374 03	333207 03	336786 03	340205 03	343535 03
348.0	310767 03	314647 03	320733 03	325624 03	329861 03	333697 03	337278 03	340700 03	344033 03
348.5	311240 03	315123 03	321213 03	326109 03	330348 03	334187 03	337771 03	341195 03	344530 03
349.0	311713 02	315599 03	321693 03	326593 03	330836 03	334677 03	338264 03	341690 03	345028 03
349.5	312185 03	316075 03	322173 03	327077 03	331323 03	335167 03	338756 03	342186 03	345525 03
350.0	312658 02	316550 03	322654 03	327561 03	331810 03	335657 03	339249 03	342681 03	346023 03
350.5	313131 03	317026 03	323134 03	328045 03	332297 03	336147 03	339742 03	343176 03	346521 03
351.0	313604 02	317502 03	323615 03	328529 03	332785 03	336638 03	340234 03	343671 03	347018 03
351.5	314076 03	317978 03	324095 03	329013 03	333272 03	337128 03	340727 03	344166 03	347516 03
352.0	314549 03	318454 03	324576 03	329497 03	333759 03	337618 03	341220 03	344662 03	348014 03
352.5	315022 03	318929 03	325056 03	329981 03	334246 03	338108 03	341713 03	345157 03	348511 03
353.0	315495 02	319405 03	325536 03	330465 03	334734 03	338598 03	342205 03	345652 03	349009 03
353.5	315968 03	319881 03	326017 03	330950 03	335221 03	339088 03	342698 03	346147 03	349506 03
354.0	316441 03	320357 03	326497 03	331434 03	335708 03	339578 03	343191 03	346643 03	350004 03
354.5	316914 02	320833 03	326978 03	331918 03	336196 03	340068 03	343684 03	347138 03	350502 03
355.0	317387 02	321309 03	327459 03	332402 03	336683 03	340558 03	344176 03	347633 03	350999 03
355.5	317860 03	321785 03	327939 03	332886 03	337170 03	341049 03	344669 03	348128 03	351497 03
356.0	318333 03	322261 03	328420 03	333370 03	337658 03	341539 03	345162 03	348624 03	351995 03
356.5	318806 03	322737 03	328900 03	333855 03	338145 03	342029 03	345655 03	349119 03	352492 03
357.0	319279 03	323213 03	329381 03	334339 03	338632 03	342519 03	346147 03	349614 03	352990 03
357.5	319752 03	323689 03	329861 03	334823 03	339120 03	343009 03	346640 03	350109 03	353488 03
358.0	320225 03	324165 03	330342 03	335307 03	339607 03	343500 03	347133 03	350605 03	353985 03
358.5	320698 02	324641 03	330823 03	335792 03	340094 03	343990 03	347626 03	351100 03	354483 03
359.0	321171 03	325117 03	331303 03	336276 03	340582 03	344480 03	348119 03	351595 03	354981 03
359.5	321644 02	325593 03	331784 03	336760 03	341069 03	344970 03	348611 03	352090 03	355478 03
360.0	322117 03	326069 03	332265 03	337245 03	341557 03	345460 03	349104 03	352586 03	355976 03
360.5	322591 02	326545 03	332745 03	337729 03	342044 03	345951 03	349597 03	353081 03	356474 03
361.0	323064 03	327021 03	333226 03	338213 03	342531 03	346441 03	350090 03	353576 03	356971 03
361.5	323537 02	327497 03	333707 03	338698 03	343019 03	346931 03	350583 03	354071 03	357469 03
362.0	324010 02	327974 03	334187 03	339182 03	343506 03	347421 03	351076 03	354567 03	357967 03

$\nu/2$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
362.5	.324403	.328450	.334660	.339666	.343994	.347911	.351568	.355062	.358484	.361834
363.0	.324957	.329026	.335236	.340251	.344601	.348482	.352061	.355557	.358962	.362334
363.5	.325530	.329603	.335813	.340835	.345169	.348992	.352564	.356053	.359459	.362834
364.0	.326123	.330196	.336406	.341428	.345762	.349585	.353147	.356648	.359957	.363334
364.5	.326737	.330810	.337020	.342042	.346376	.350199	.353751	.357252	.360553	.363934
365.0	.327370	.331443	.337653	.342675	.347009	.350832	.354384	.357885	.361186	.364563
365.5	.328023	.332096	.338306	.343328	.347662	.351485	.355037	.358538	.361839	.365216
366.0	.328696	.332769	.338979	.343991	.348325	.352148	.355700	.359201	.362502	.365879
366.5	.329379	.333452	.339662	.344674	.349008	.352831	.356383	.359884	.363185	.366562
367.0	.330072	.334145	.340355	.345377	.349711	.353534	.357086	.360587	.363888	.367265
367.5	.330785	.334858	.341068	.346090	.350424	.354247	.357800	.361301	.364602	.367979
368.0	.331508	.335581	.341791	.346813	.351147	.354970	.358522	.362023	.365324	.368701
368.5	.332241	.336314	.342524	.347546	.351880	.355703	.359255	.362756	.366057	.369434
369.0	.332994	.337067	.343277	.348299	.352633	.356456	.359908	.363409	.366710	.370087
369.5	.333757	.337830	.344040	.349062	.353396	.357219	.360671	.364172	.367473	.370850
370.0	.334530	.338603	.344813	.349835	.354169	.357992	.361444	.364945	.368246	.371623
370.5	.335313	.339386	.345596	.350618	.354952	.358775	.362227	.365728	.369029	.372406
371.0	.336106	.340179	.346389	.351411	.355745	.359568	.363020	.366521	.369822	.373200
371.5	.336909	.340982	.347192	.352214	.356548	.360371	.363823	.367324	.370625	.374002
372.0	.337722	.341795	.348005	.353027	.357361	.361184	.364636	.368137	.371438	.374815
372.5	.338545	.342618	.348828	.353850	.358184	.362007	.365459	.368960	.372261	.375638
373.0	.339378	.343451	.349661	.354683	.359017	.362840	.366292	.369793	.373094	.376471
373.5	.340221	.344294	.350504	.355526	.359860	.363683	.367135	.370636	.373937	.377314
374.0	.341074	.345147	.351357	.356379	.360713	.364536	.368088	.371589	.374890	.378267
374.5	.341937	.346010	.352220	.357242	.361576	.365399	.368951	.372452	.375753	.379130
375.0	.342810	.346883	.353093	.358115	.362449	.366272	.369824	.373325	.376626	.380003
375.5	.343693	.347766	.353976	.358998	.363332	.367155	.370707	.374208	.377509	.380886
376.0	.344586	.348659	.354869	.359891	.364225	.368048	.371600	.375101	.378402	.381779
376.5	.345489	.349562	.355772	.360794	.365128	.368951	.372503	.376004	.379305	.382682
377.0	.346402	.350475	.356685	.361707	.366041	.369864	.373416	.376917	.380218	.383595
377.5	.347325	.351398	.357608	.362630	.366964	.370787	.374339	.377840	.381141	.384518
378.0	.348258	.352331	.358541	.363563	.367897	.371720	.375272	.378773	.382074	.385451
378.5	.349201	.353274	.359484	.364506	.368840	.372663	.376215	.379716	.383017	.386394
379.0	.350154	.354227	.360437	.365459	.369793	.373616	.377168	.380669	.383970	.387347
379.5	.351117	.355190	.361400	.366422	.370756	.374579	.378131	.381632	.384933	.388310
380.0	.352090	.356163	.362373	.367395	.371729	.375552	.379104	.382605	.385906	.389283
380.5	.353073	.357146	.363356	.368378	.372712	.376535	.380087	.383588	.386889	.390266
381.0	.354066	.358139	.364350	.369372	.373706	.377529	.381081	.384582	.387883	.391260
381.5	.355069	.359142	.365353	.370375	.374709	.378532	.382084	.385585	.388886	.392263
382.0	.356082	.360155	.366365	.371387	.375721	.379544	.383196	.386697	.390098	.393475
382.5	.357105	.361178	.367388	.372410	.376744	.380567	.384119	.387620	.390921	.394298
383.0	.358138	.362211	.368421	.373443	.377777	.381600	.385152	.388653	.391954	.395331
383.5	.359181	.363254	.369464	.374486	.378820	.382643	.386195	.389696	.393097	.396474
384.0	.360234	.364307	.370517	.375539	.379873	.383696	.387248	.390749	.394050	.397427
384.5	.361297	.365370	.371580	.376602	.380936	.384759	.388311	.391812	.395113	.398490
385.0	.362370	.366443	.372653	.377675	.382009	.385832	.389384	.392885	.396186	.399563
385.5	.363453	.367526	.373736	.378758	.383092	.386915	.390467	.393968	.397269	.400646
386.0	.364546	.368619	.374829	.379851	.384185	.387998	.391550	.395051	.398352	.401729
386.5	.365649	.369722	.375932	.380954	.385288	.389101	.392653	.396154	.399455	.402832
387.0	.366762	.370835	.377045	.382067	.386401	.390214	.393766	.397267	.400568	.403945

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and u

u	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
387.5	.348160 03	.352279 03	.358721 03	.363097 03	.368377 03	.372332 03	.376216 03	.379930 03	.38349 03	.386834 03
388.0	.348642 03	.352756 03	.359202 03	.363582 03	.368865 03	.372823 03	.376709 03	.380326 03	.383847 03	.387334 03
388.5	.349116 03	.353233 03	.359684 03	.364067 03	.369353 03	.373313 03	.377202 03	.380821 03	.384345 03	.387834 03
389.0	.349591 03	.353710 03	.360165 03	.364552 03	.369844 03	.373804 03	.377695 03	.381317 03	.384843 03	.388334 03
389.5	.350065 03	.354187 03	.360647 03	.365037 03	.370329 03	.374295 03	.378189 03	.381812 03	.385340 03	.388834 03
390.0	.350539 03	.354664 03	.361120 03	.365512 03	.370807 03	.374785 03	.378682 03	.382308 03	.385838 03	.389334 03
390.5	.351013 03	.355141 03	.361609 03	.366006 03	.371305 03	.375285 03	.379175 03	.382803 03	.386336 03	.389834 03
391.0	.351487 03	.355618 03	.362091 03	.366488 03	.371793 03	.375785 03	.379688 03	.383329 03	.386868 03	.390334 03
391.5	.351962 03	.356095 03	.362572 03	.366976 03	.372281 03	.376287 03	.380191 03	.383834 03	.387371 03	.390834 03
392.0	.352436 03	.356572 03	.363054 03	.367461 03	.372769 03	.376784 03	.380695 03	.384334 03	.387869 03	.391334 03
392.5	.352910 03	.357049 03	.363535 03	.367946 03	.373257 03	.377280 03	.381197 03	.384834 03	.388369 03	.391834 03
393.0	.353385 03	.357526 03	.364017 03	.368431 03	.373744 03	.377782 03	.381698 03	.385334 03	.388869 03	.392334 03
393.5	.353859 03	.358003 03	.364490 03	.368906 03	.374220 03	.378270 03	.382186 03	.385834 03	.389369 03	.392834 03
394.0	.354333 03	.358481 03	.364980 03	.369398 03	.374720 03	.378782 03	.382700 03	.386334 03	.389869 03	.393334 03
394.5	.354808 03	.358961 03	.365461 03	.369880 03	.375208 03	.379282 03	.383200 03	.386834 03	.390369 03	.393834 03
395.0	.355282 03	.359439 03	.365943 03	.370364 03	.375696 03	.379782 03	.383700 03	.387334 03	.390869 03	.394334 03
395.5	.355756 03	.359918 03	.366424 03	.370847 03	.376184 03	.380282 03	.384200 03	.387834 03	.391369 03	.394834 03
396.0	.356231 03	.360399 03	.366906 03	.371331 03	.376672 03	.380782 03	.384700 03	.388334 03	.391869 03	.395334 03
396.5	.356705 03	.360878 03	.367388 03	.371814 03	.377160 03	.381282 03	.385200 03	.388834 03	.392369 03	.395834 03
397.0	.357180 03	.361354 03	.367869 03	.372296 03	.377648 03	.381782 03	.385700 03	.389334 03	.392869 03	.396334 03
397.5	.357654 03	.361831 03	.368351 03	.372782 03	.378136 03	.382282 03	.386200 03	.389834 03	.393369 03	.396834 03
398.0	.358128 03	.362308 03	.368832 03	.373264 03	.378624 03	.382782 03	.386700 03	.390334 03	.393869 03	.397334 03
398.5	.358603 03	.362786 03	.369314 03	.373764 03	.379124 03	.383282 03	.387200 03	.390834 03	.394369 03	.397834 03
399.0	.359077 03	.363263 03	.369796 03	.374282 03	.379642 03	.383800 03	.387720 03	.391334 03	.394869 03	.398334 03
399.5	.359552 03	.363740 03	.370277 03	.374782 03	.380142 03	.384300 03	.388220 03	.391834 03	.395369 03	.398834 03
400.0	.360026 03	.364218 03	.370759 03	.375272 03	.380632 03	.384790 03	.388720 03	.392334 03	.395869 03	.399334 03
400.5	.360501 03	.364696 03	.371242 03	.375764 03	.381124 03	.385282 03	.389220 03	.392834 03	.396369 03	.399834 03
401.0	.360976 03	.365174 03	.371817 03	.376340 03	.381702 03	.385860 03	.389800 03	.393434 03	.396969 03	.400434 03
401.5	.361450 03	.365650 03	.372493 03	.377016 03	.382378 03	.386536 03	.390480 03	.394134 03	.397669 03	.401134 03
402.0	.361925 03	.366127 03	.373268 03	.377792 03	.383154 03	.387312 03	.391260 03	.394934 03	.398469 03	.401934 03
402.5	.362399 03	.366603 03	.374047 03	.378572 03	.383934 03	.388092 03	.392040 03	.395734 03	.399269 03	.402734 03
403.0	.362874 03	.367080 03	.374649 03	.379174 03	.384536 03	.388694 03	.392642 03	.396334 03	.399869 03	.403334 03
403.5	.363349 03	.367557 03	.375331 03	.379856 03	.385218 03	.389376 03	.393324 03	.397034 03	.400569 03	.404034 03
404.0	.363823 03	.368033 03	.375807 03	.380332 03	.385694 03	.389852 03	.393800 03	.397534 03	.401069 03	.404534 03
404.5	.364298 03	.368509 03	.376283 03	.380808 03	.386170 03	.390328 03	.394276 03	.397934 03	.401469 03	.404934 03
405.0	.364773 03	.368986 03	.376761 03	.381286 03	.386648 03	.390806 03	.394754 03	.398434 03	.401969 03	.405434 03
405.5	.365247 03	.369463 03	.377239 03	.381764 03	.387126 03	.391284 03	.395232 03	.398934 03	.402469 03	.405934 03
406.0	.365722 03	.369939 03	.377715 03	.382240 03	.387602 03	.391760 03	.395708 03	.399434 03	.402969 03	.406434 03
406.5	.366197 03	.370416 03	.378191 03	.382716 03	.388078 03	.392236 03	.396184 03	.399934 03	.403469 03	.406934 03
407.0	.366671 03	.370891 03	.378667 03	.383192 03	.388554 03	.392712 03	.396660 03	.400434 03	.403969 03	.407434 03
407.5	.367146 03	.371369 03	.379145 03	.383670 03	.389032 03	.393190 03	.397138 03	.400934 03	.404469 03	.407934 03
408.0	.367621 03	.371846 03	.379623 03	.384148 03	.389510 03	.393668 03	.397616 03	.401434 03	.404969 03	.408434 03
408.5	.368096 03	.372323 03	.380101 03	.384626 03	.389988 03	.394146 03	.398094 03	.401934 03	.405469 03	.408934 03
409.0	.368571 03	.372800 03	.380579 03	.385104 03	.390466 03	.394624 03	.398572 03	.402434 03	.405969 03	.409434 03
409.5	.369045 03	.373275 03	.381055 03	.385580 03	.390942 03	.395100 03	.399048 03	.402934 03	.406469 03	.409934 03
410.0	.369520 03	.373751 03	.381531 03	.386056 03	.391418 03	.395576 03	.399524 03	.403434 03	.406969 03	.410434 03
410.5	.369995 03	.374226 03	.382007 03	.386532 03	.391894 03	.396052 03	.399999 03	.403934 03	.407469 03	.410934 03
411.0	.370470 03	.374702 03	.382483 03	.387008 03	.392370 03	.396528 03	.400476 03	.404434 03	.407969 03	.411434 03
411.5	.370945 03	.375178 03	.382961 03	.387486 03	.392848 03	.396996 03	.400944 03	.404934 03	.408469 03	.411934 03
412.0	.371420 03	.375654 03	.383437 03	.387962 03	.393324 03	.397472 03	.401420 03	.405434 03	.408969 03	.412434 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
412.5	.371895 02	.376145 03	.382804 03	.388152 03	.392781 03	.396968 03	.400875 03	.404606 03	.408238 03	.411874 03
413.0	.372370 02	.376623 03	.383286 03	.388638 03	.393269 03	.397458 03	.401369 03	.405102 03	.408736 03	.412374 03
413.5	.372845 03	.377100 03	.383768 03	.389123 03	.393755 03	.397945 03	.401856 03	.405597 03	.409234 03	.412874 03
414.0	.373320 03	.377578 03	.384250 03	.389608 03	.394241 03	.398431 03	.402342 03	.406083 03	.409720 03	.413364 03
414.5	.373795 03	.378056 03	.384732 03	.390094 03	.394736 03	.398926 03	.402837 03	.406578 03	.410215 03	.413864 03
415.0	.374270 03	.378534 03	.385214 03	.390579 03	.395222 03	.399413 03	.403324 03	.407065 03	.410702 03	.414354 03
415.5	.374745 03	.379011 03	.385696 03	.391065 03	.395710 03	.399901 03	.403812 03	.407553 03	.411190 03	.414844 03
416.0	.375220 03	.379489 03	.386178 03	.391550 03	.396199 03	.400390 03	.404301 03	.408042 03	.411679 03	.415334 03
416.5	.375695 03	.379967 03	.386660 03	.392035 03	.396687 03	.400878 03	.404789 03	.408530 03	.412167 03	.415824 03
417.0	.376170 02	.380445 03	.387142 03	.392521 03	.397175 03	.401366 03	.405315 03	.409067 03	.412718 03	.416374 03
417.5	.376645 02	.380922 03	.387624 03	.393006 03	.397663 03	.401854 03	.405803 03	.409556 03	.413216 03	.416874 03
418.0	.377120 02	.381400 03	.388106 03	.393492 03	.398152 03	.402343 03	.406292 03	.410045 03	.413714 03	.417384 03
418.5	.377595 02	.381878 03	.388588 03	.393977 03	.398648 03	.402839 03	.406788 03	.410541 03	.414210 03	.417884 03
419.0	.378070 03	.382356 03	.389070 03	.394463 03	.399128 03	.403319 03	.407268 03	.411021 03	.414690 03	.418364 03
419.5	.378545 03	.382834 03	.389552 03	.394948 03	.399617 03	.403808 03	.407757 03	.411510 03	.415179 03	.418854 03
420.0	.379020 03	.383312 03	.390034 03	.395433 03	.400105 03	.404296 03	.408245 03	.411998 03	.415667 03	.419344 03
420.5	.379495 03	.383790 03	.390516 03	.395919 03	.400593 03	.404784 03	.408733 03	.412486 03	.416155 03	.419834 03
421.0	.379971 03	.384267 03	.390999 03	.396404 03	.401078 03	.405269 03	.409218 03	.412971 03	.416640 03	.420324 03
421.5	.380446 03	.384745 03	.391481 03	.396890 03	.401578 03	.405769 03	.409718 03	.413471 03	.417140 03	.420824 03
422.0	.380921 03	.385223 03	.391963 03	.397375 03	.402059 03	.406250 03	.410199 03	.413952 03	.417621 03	.421304 03
422.5	.381396 02	.385701 03	.392445 03	.397861 03	.402547 03	.406738 03	.410687 03	.414440 03	.418109 03	.421804 03
423.0	.381871 03	.386179 03	.392927 03	.398346 03	.403035 03	.407226 03	.411175 03	.414928 03	.418607 03	.422334 03
423.5	.382347 03	.386657 03	.393409 03	.398832 03	.403524 03	.407715 03	.411664 03	.415417 03	.419096 03	.422734 03
424.0	.382822 03	.387135 03	.393892 03	.399317 03	.404002 03	.408193 03	.412142 03	.415895 03	.419574 03	.423234 03
424.5	.383297 03	.387613 03	.394374 03	.399803 03	.404489 03	.408680 03	.412629 03	.416382 03	.420061 03	.423564 03
425.0	.383773 03	.388091 03	.394856 03	.400289 03	.404974 03	.409165 03	.413114 03	.416867 03	.420546 03	.424084 03
425.5	.384248 03	.388569 03	.395338 03	.400774 03	.405459 03	.409650 03	.413600 03	.417353 03	.421032 03	.424564 03
426.0	.384723 03	.389047 03	.395820 03	.401260 03	.405945 03	.410136 03	.414085 03	.417838 03	.421517 03	.425034 03
426.5	.385198 03	.389525 03	.396303 03	.401745 03	.406430 03	.410621 03	.414570 03	.418323 03	.422002 03	.425534 03
427.0	.385674 03	.390003 03	.396785 03	.402231 03	.406916 03	.411106 03	.415055 03	.418808 03	.422487 03	.426034 03
427.5	.386149 03	.390481 03	.397267 03	.402716 03	.407401 03	.411591 03	.415540 03	.419293 03	.422972 03	.426534 03
428.0	.386625 03	.390959 03	.397749 03	.403202 03	.407887 03	.412077 03	.416026 03	.419779 03	.423458 03	.427034 03
428.5	.387100 03	.391437 03	.398232 03	.403688 03	.408373 03	.412563 03	.416512 03	.420265 03	.423944 03	.427534 03
429.0	.387575 03	.391916 03	.398714 03	.404173 03	.408858 03	.413048 03	.416997 03	.420750 03	.424429 03	.428034 03
429.5	.388051 03	.392394 03	.399196 03	.404659 03	.409344 03	.413534 03	.417483 03	.421236 03	.424915 03	.428534 03
430.0	.388526 03	.392872 03	.399679 03	.405145 03	.409830 03	.414020 03	.417969 03	.421722 03	.425401 03	.429034 03
430.5	.389002 03	.393350 03	.400161 03	.405630 03	.410315 03	.414505 03	.418454 03	.422207 03	.425886 03	.429534 03
431.0	.389477 03	.393828 03	.400643 03	.406116 03	.410801 03	.415000 03	.418949 03	.422702 03	.426381 03	.430034 03
431.5	.389953 03	.394306 03	.401126 03	.406602 03	.411287 03	.415496 03	.419445 03	.423198 03	.426877 03	.430434 03
432.0	.390428 03	.394784 03	.401608 03	.407087 03	.411772 03	.415981 03	.419930 03	.423683 03	.427362 03	.431034 03
432.5	.390904 03	.395263 03	.402090 03	.407573 03	.412258 03	.416467 03	.420416 03	.424169 03	.427848 03	.431534 03
433.0	.391379 03	.395741 03	.402573 03	.408059 03	.412744 03	.416953 03	.420902 03	.424655 03	.428334 03	.432034 03
433.5	.391855 03	.396219 03	.403055 03	.408544 03	.413229 03	.417438 03	.421387 03	.425140 03	.428819 03	.432534 03
434.0	.392330 03	.396697 03	.403537 03	.409030 03	.413715 03	.417924 03	.421873 03	.425626 03	.429305 03	.433034 03
434.5	.392806 03	.397175 03	.404020 03	.409516 03	.414201 03	.418410 03	.422359 03	.426112 03	.429791 03	.433534 03
435.0	.393281 03	.397654 03	.404502 03	.410001 03	.414686 03	.418895 03	.422844 03	.426597 03	.430276 03	.433934 03
435.5	.393757 03	.398132 03	.404985 03	.410487 03	.415172 03	.419381 03	.423330 03	.427083 03	.430762 03	.434434 03
436.0	.394233 03	.398610 03	.405467 03	.410973 03	.415658 03	.419867 03	.423816 03	.427569 03	.431248 03	.434934 03
436.5	.394708 02	.399089 03	.405950 03	.411459 03	.416144 03	.420353 03	.424302 03	.428055 03	.431734 03	.435434 03
437.0	.395184 03	.399567 03	.406432 03	.411944 03	.416629 03	.420838 03	.424787 03	.428540 03	.432219 03	.435934 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
437.5	.395659 03	.408045 03	.406914 03	.412430 03	.417202 03	.421510 03	.425544 03	.429389 03	.433130 03	.436834 03
438.0	.396135 03	.408524 03	.407397 03	.412916 03	.417698 03	.422009 03	.426038 03	.429885 03	.433628 03	.437334 03
438.5	.396611 03	.409000 03	.407879 03	.413402 03	.418179 03	.422500 03	.426531 03	.430380 03	.434126 03	.437834 03
439.0	.397086 03	.409475 03	.408356 03	.413880 03	.418667 03	.422992 03	.427025 03	.430876 03	.434624 03	.438334 03
439.5	.397562 03	.409951 03	.408834 03	.414357 03	.419156 03	.423483 03	.427518 03	.431372 03	.435122 03	.438834 03
440.0	.398038 03	.410427 03	.409312 03	.414859 03	.419645 03	.423974 03	.428012 03	.431867 03	.435620 03	.439334 03
440.5	.398514 03	.410903 03	.409789 03	.415415 03	.420222 03	.424556 03	.428599 03	.432459 03	.436215 03	.439934 03
441.0	.398989 03	.411379 03	.410267 03	.415831 03	.420648 03	.424986 03	.429033 03	.432896 03	.436655 03	.440334 03
441.5	.399465 03	.411855 03	.410745 03	.416316 03	.421133 03	.425477 03	.429528 03	.433395 03	.437153 03	.440834 03
442.0	.399941 03	.412331 03	.411223 03	.416802 03	.421619 03	.425968 03	.430023 03	.433895 03	.437651 03	.441334 03
442.5	.400417 03	.412807 03	.411701 03	.417388 03	.422206 03	.426559 03	.430628 03	.434505 03	.438259 03	.441834 03
443.0	.400892 03	.413283 03	.412179 03	.417974 03	.422792 03	.427150 03	.431223 03	.435105 03	.438855 03	.442334 03
443.5	.401368 03	.413759 03	.412657 03	.418560 03	.423378 03	.427740 03	.431817 03	.435705 03	.439450 03	.442934 03
444.0	.401844 03	.414235 03	.413135 03	.418946 03	.423764 03	.428130 03	.432211 03	.436105 03	.439845 03	.443434 03
444.5	.402320 03	.414711 03	.413613 03	.419432 03	.424250 03	.428620 03	.432705 03	.436605 03	.440340 03	.443834 03
445.0	.402796 03	.415187 03	.414091 03	.419917 03	.424736 03	.429109 03	.433200 03	.437105 03	.440835 03	.444334 03
445.5	.403272 03	.415663 03	.414569 03	.420393 03	.425214 03	.429590 03	.433685 03	.437600 03	.441325 03	.444834 03
446.0	.403748 03	.416139 03	.415047 03	.420869 03	.425692 03	.430070 03	.434170 03	.438100 03	.441785 03	.445284 03
446.5	.404223 03	.416615 03	.415525 03	.421393 03	.426218 03	.430600 03	.434715 03	.438660 03	.442340 03	.445834 03
447.0	.404699 03	.417091 03	.416003 03	.421869 03	.426696 03	.431080 03	.435210 03	.439165 03	.442815 03	.446334 03
447.5	.405175 03	.417567 03	.416481 03	.422347 03	.427176 03	.431565 03	.435700 03	.439670 03	.443325 03	.446834 03
448.0	.405651 03	.418043 03	.416959 03	.422823 03	.427654 03	.432045 03	.436185 03	.440170 03	.443775 03	.447284 03
448.5	.406127 03	.418519 03	.417437 03	.423300 03	.428132 03	.432525 03	.436670 03	.440665 03	.444275 03	.447784 03
449.0	.406603 03	.418995 03	.417915 03	.423776 03	.428609 03	.433005 03	.437155 03	.441155 03	.444765 03	.448274 03
449.5	.407079 03	.419471 03	.418393 03	.424252 03	.429086 03	.433485 03	.437640 03	.441645 03	.445255 03	.448764 03
450.0	.407555 03	.419947 03	.418871 03	.424728 03	.429564 03	.433965 03	.438125 03	.442130 03	.445745 03	.449254 03
450.5	.408031 03	.420423 03	.419349 03	.425204 03	.430042 03	.434445 03	.438610 03	.442620 03	.446235 03	.449744 03
451.0	.408507 03	.420899 03	.419827 03	.425680 03	.430520 03	.434925 03	.439095 03	.443110 03	.446725 03	.450234 03
451.5	.408983 03	.421375 03	.420305 03	.426156 03	.431000 03	.435405 03	.439580 03	.443600 03	.447215 03	.450724 03
452.0	.409459 03	.421851 03	.420783 03	.426632 03	.431477 03	.435885 03	.440065 03	.444080 03	.447695 03	.451234 03
452.5	.409935 03	.422327 03	.421261 03	.427108 03	.432036 03	.436445 03	.440630 03	.444650 03	.448265 03	.451744 03
453.0	.410411 03	.422803 03	.421739 03	.427556 03	.432485 03	.436895 03	.441085 03	.445110 03	.448725 03	.452254 03
453.5	.410887 03	.423279 03	.422217 03	.428010 03	.432940 03	.437355 03	.441550 03	.445575 03	.449190 03	.452764 03
454.0	.411363 03	.423755 03	.422695 03	.428498 03	.433428 03	.437845 03	.442045 03	.446070 03	.449685 03	.453274 03
454.5	.411840 03	.424231 03	.423173 03	.428976 03	.433907 03	.438325 03	.442530 03	.446555 03	.450170 03	.453684 03
455.0	.412315 03	.424707 03	.423651 03	.429479 03	.434410 03	.438825 03	.443030 03	.447055 03	.450670 03	.454184 03
455.5	.412792 03	.425183 03	.424129 03	.429967 03	.434898 03	.439315 03	.443520 03	.447545 03	.451160 03	.454674 03
456.0	.413268 03	.425659 03	.424607 03	.430450 03	.435381 03	.439795 03	.444000 03	.448025 03	.451640 03	.455154 03
456.5	.413744 03	.426135 03	.425085 03	.430893 03	.435825 03	.440240 03	.444445 03	.448470 03	.452085 03	.455599 03
457.0	.414220 03	.426611 03	.425563 03	.431369 03	.436302 03	.440717 03	.444920 03	.448945 03	.452560 03	.456074 03
457.5	.414696 03	.427087 03	.426041 03	.431867 03	.436800 03	.441215 03	.445415 03	.449440 03	.453055 03	.456569 03
458.0	.415173 03	.427563 03	.426519 03	.432343 03	.437276 03	.441690 03	.445890 03	.449915 03	.453530 03	.457044 03
458.5	.415649 03	.428039 03	.427000 03	.432817 03	.437750 03	.442165 03	.446365 03	.450390 03	.454005 03	.457519 03
459.0	.416125 03	.428515 03	.427477 03	.433293 03	.438226 03	.442640 03	.446840 03	.450865 03	.454480 03	.458094 03
459.5	.416601 03	.428991 03	.427955 03	.433769 03	.438702 03	.443115 03	.447315 03	.451340 03	.454955 03	.458569 03
460.0	.417077 03	.429467 03	.428433 03	.434245 03	.439178 03	.443590 03	.447790 03	.451815 03	.455430 03	.459044 03
460.5	.417553 03	.429943 03	.428911 03	.434721 03	.439654 03	.444065 03	.448265 03	.452290 03	.455905 03	.459519 03
461.0	.418030 03	.430419 03	.429389 03	.435197 03	.440130 03	.444540 03	.448740 03	.452765 03	.456380 03	.460094 03
461.5	.418506 03	.430895 03	.429867 03	.435673 03	.440605 03	.445015 03	.449215 03	.453240 03	.456855 03	.460469 03
462.0	.418983 03	.431371 03	.430345 03	.436151 03	.441075 03	.445485 03	.449685 03	.453710 03	.457325 03	.461090 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν	.92500	.90000	.85000	.80000	.75000	.70000	.65000	.60000	.55000	.50000
462.5	.419459 03	.423976 03	.431050 03	.436728 03	.441639 03	.446081 03	.450223 03	.454177 03	.458025 03	.461834 03
463.0	.419935 03	.424455 03	.431533 03	.437210 03	.442120 03	.446572 03	.450717 03	.454673 03	.458523 03	.462334 03
463.5	.420412 03	.424934 03	.432016 03	.437693 03	.442603 03	.447055 03	.451200 03	.455169 03	.459021 03	.462834 03
464.0	.420888 03	.425413 03	.432499 03	.438180 03	.443090 03	.447542 03	.451687 03	.455655 03	.459519 03	.463334 03
464.5	.421364 03	.425892 03	.432982 03	.438673 03	.443585 03	.448036 03	.452181 03	.456161 03	.460017 03	.463834 03
465.0	.421841 03	.426374 03	.433465 03	.439159 03	.444070 03	.448521 03	.452666 03	.456657 03	.460513 03	.464334 03
465.5	.422317 03	.426850 03	.433948 03	.439645 03	.444557 03	.449008 03	.453153 03	.457152 03	.461010 03	.464834 03
466.0	.422794 03	.427329 03	.434431 03	.440131 03	.445042 03	.449493 03	.453638 03	.457648 03	.461511 03	.465334 03
466.5	.423270 03	.427808 03	.434914 03	.440618 03	.445529 03	.450012 03	.454172 03	.458144 03	.462009 03	.465834 03
467.0	.423746 03	.428287 03	.435397 03	.441104 03	.446019 03	.450503 03	.454666 03	.458640 03	.462507 03	.466334 03
467.5	.424223 03	.428766 03	.435880 03	.441590 03	.446508 03	.450995 03	.455160 03	.459136 03	.463005 03	.466834 03
468.0	.424699 03	.429245 03	.436363 03	.442076 03	.447000 03	.451486 03	.455654 03	.459632 03	.463503 03	.467334 03
468.5	.425176 03	.429724 03	.436846 03	.442562 03	.447495 03	.451977 03	.456147 03	.460128 03	.464001 03	.467834 03
469.0	.425652 03	.430203 03	.437329 03	.443049 03	.447995 03	.452476 03	.456641 03	.460623 03	.464499 03	.468334 03
469.5	.426129 03	.430682 03	.437812 03	.443535 03	.448484 03	.452960 03	.457135 03	.461119 03	.464997 03	.468834 03
470.0	.426605 03	.431161 03	.438295 03	.444021 03	.448973 03	.453452 03	.457628 03	.461615 03	.465495 03	.469334 03
470.5	.427082 03	.431641 03	.438778 03	.444507 03	.449462 03	.453943 03	.458122 03	.462111 03	.465992 03	.469834 03
471.0	.427558 03	.432120 03	.439262 03	.444994 03	.449951 03	.454435 03	.458616 03	.462607 03	.466490 03	.470334 03
471.5	.428035 03	.432599 03	.439745 03	.445480 03	.450440 03	.454926 03	.459109 03	.463103 03	.466988 03	.470834 03
472.0	.428511 03	.433078 03	.440228 03	.445966 03	.450929 03	.455410 03	.459603 03	.463599 03	.467486 03	.471334 03
472.5	.428988 03	.433557 03	.440711 03	.446453 03	.451416 03	.455909 03	.460097 03	.464095 03	.467984 03	.471834 03
473.0	.429465 03	.434036 03	.441194 03	.446939 03	.451907 03	.456401 03	.460591 03	.464590 03	.468482 03	.472334 03
473.5	.429941 03	.434515 03	.441677 03	.447425 03	.452396 03	.456892 03	.461084 03	.465086 03	.468980 03	.472834 03
474.0	.430418 03	.434995 03	.442160 03	.447912 03	.452885 03	.457383 03	.461578 03	.465582 03	.469478 03	.473334 03
474.5	.430894 03	.435473 03	.442643 03	.448398 03	.453374 03	.457875 03	.462073 03	.466076 03	.469976 03	.473834 03
475.0	.431371 03	.435953 03	.443127 03	.448884 03	.453863 03	.458366 03	.462566 03	.466574 03	.470474 03	.474333 03
475.5	.431848 03	.436432 03	.443603 03	.449371 03	.454353 03	.458858 03	.463053 03	.467060 03	.470972 03	.474833 03
476.0	.432324 03	.436911 03	.444083 03	.449857 03	.454842 03	.459349 03	.463553 03	.467566 03	.471470 03	.475333 03
476.5	.432801 03	.437391 03	.444576 03	.450353 03	.455331 03	.459841 03	.464047 03	.468062 03	.471968 03	.475833 03
477.0	.433278 03	.437870 03	.445059 03	.450830 03	.455820 03	.460332 03	.464541 03	.468558 03	.472466 03	.476333 03
477.5	.433754 03	.438349 03	.445543 03	.451316 03	.456309 03	.460824 03	.465034 03	.469053 03	.472964 03	.476833 03
478.0	.434231 03	.438828 03	.446026 03	.451802 03	.456798 03	.461315 03	.465528 03	.469549 03	.473462 03	.477333 03
478.5	.434708 03	.439308 03	.446509 03	.452289 03	.457287 03	.461807 03	.466022 03	.470045 03	.473960 03	.477833 03
479.0	.435184 03	.439787 03	.446992 03	.452775 03	.457776 03	.462298 03	.466516 03	.470541 03	.474458 03	.478333 03
479.5	.435661 03	.440266 03	.447476 03	.453262 03	.458265 03	.462790 03	.467009 03	.471037 03	.474956 03	.478833 03
480.0	.436138 03	.440745 03	.447959 03	.453748 03	.458754 03	.463282 03	.467503 03	.471533 03	.475454 03	.479333 03
480.5	.436615 03	.441225 03	.448442 03	.454234 03	.459243 03	.463773 03	.467997 03	.472029 03	.475952 03	.479833 03
481.0	.437091 03	.441704 03	.448925 03	.454721 03	.459733 03	.464265 03	.468491 03	.472525 03	.476450 03	.480333 03
481.5	.437568 03	.442183 03	.449409 03	.455207 03	.460222 03	.464756 03	.468985 03	.473021 03	.476948 03	.480833 03
482.0	.438045 03	.442663 03	.449892 03	.455694 03	.460711 03	.465248 03	.469478 03	.473517 03	.477446 03	.481333 03
482.5	.438522 03	.443142 03	.450375 03	.456180 03	.461200 03	.465739 03	.469972 03	.474012 03	.477944 03	.481833 03
483.0	.438999 03	.443621 03	.450859 03	.456667 03	.461689 03	.466231 03	.470466 03	.474508 03	.478442 03	.482333 03
483.5	.439475 03	.444101 03	.451442 03	.457253 03	.462278 03	.466822 03	.471060 03	.475004 03	.478940 03	.482833 03
484.0	.439952 03	.444580 03	.451895 03	.457713 03	.462743 03	.467294 03	.471545 03	.475500 03	.479437 03	.483333 03
484.5	.440429 03	.445060 03	.452309 03	.458126 03	.463156 03	.467705 03	.471947 03	.475996 03	.479935 03	.483833 03
485.0	.440906 03	.445539 03	.452792 03	.458612 03	.463646 03	.468197 03	.472441 03	.476492 03	.480433 03	.484333 03
485.5	.441383 03	.446018 03	.453275 03	.459099 03	.464135 03	.468689 03	.472935 03	.476988 03	.480931 03	.484833 03
486.0	.441860 03	.446498 03	.453759 03	.459585 03	.464624 03	.469180 03	.473429 03	.477484 03	.481429 03	.485333 03
486.5	.442337 03	.446977 03	.454242 03	.460072 03	.465113 03	.469672 03	.473923 03	.477980 03	.481927 03	.485833 03
487.0	.442814 03	.447457 03	.454725 03	.460552 03	.465602 03	.470163 03	.474416 03	.478476 03	.482425 03	.486333 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.925000	.900000	.850000	.800000	.750000	.700000	.650000	.600000	.550000	.500000
487.5	.443291 03	.447936 03	.455209 03	.461045 03	.466052 03	.470655 03	.474910 03	.478972 03	.482923 03	.486833 03
488.0	.443768 03	.448416 03	.455692 03	.461531 03	.466581 03	.471147 03	.475404 03	.479468 03	.483421 03	.487333 03
488.5	.444244 03	.448895 03	.456176 03	.462010 03	.467070 03	.471638 03	.475898 03	.479964 03	.483919 03	.487833 03
489.0	.444721 03	.449375 03	.456659 03	.462504 03	.467569 03	.472130 03	.476392 03	.480460 03	.484417 03	.488333 03
489.5	.445198 03	.449854 03	.457142 03	.462991 03	.468048 03	.472621 03	.476886 03	.480956 03	.484915 03	.488833 03
490.0	.445675 03	.450334 03	.457626 03	.463478 03	.468538 03	.473113 03	.477379 03	.481451 03	.485413 03	.489333 03
490.5	.446152 03	.450813 03	.458109 03	.463964 03	.469027 03	.473605 03	.477873 03	.481947 03	.485911 03	.489833 03
491.0	.446629 03	.451293 03	.458593 03	.464451 03	.469516 03	.474096 03	.478367 03	.482443 03	.486409 03	.490333 03
491.5	.447106 03	.451772 03	.459076 03	.464937 03	.470005 03	.474583 03	.478861 03	.482939 03	.486907 03	.490833 03
492.0	.447584 03	.452252 03	.459560 03	.465424 03	.470494 03	.475079 03	.479355 03	.483435 03	.487405 03	.491333 03
492.5	.448061 03	.452731 03	.460043 03	.465910 03	.470984 03	.475571 03	.479849 03	.483931 03	.487903 03	.491833 03
493.0	.448538 03	.453211 03	.460527 03	.466397 03	.471473 03	.476063 03	.480342 03	.484427 03	.488401 03	.492333 03
493.5	.449015 03	.453691 03	.461010 03	.466884 03	.471962 03	.476554 03	.480836 03	.484923 03	.488899 03	.492833 03
494.0	.449492 03	.454170 03	.461494 03	.467370 03	.472451 03	.477046 03	.481330 03	.485419 03	.489397 03	.493333 03
494.5	.449969 03	.454650 03	.461977 03	.467857 03	.472941 03	.477538 03	.481824 03	.485915 03	.489895 03	.493833 03
495.0	.450446 03	.455129 03	.462461 03	.468343 03	.473430 03	.478029 03	.482318 03	.486411 03	.490393 03	.494333 03
495.5	.450923 03	.455609 03	.462944 03	.468833 03	.473919 03	.478521 03	.482812 03	.486907 03	.490891 03	.494833 03
496.0	.451400 03	.456089 03	.463428 03	.469317 03	.474409 03	.479013 03	.483306 03	.487403 03	.491389 03	.495333 03
496.5	.451877 03	.456568 03	.463911 03	.469803 03	.474898 03	.479504 03	.483800 03	.487899 03	.491887 03	.495833 03
497.0	.452355 03	.457048 03	.464395 03	.470290 03	.475387 03	.479996 03	.484293 03	.488395 03	.492385 03	.496333 03
497.5	.452832 03	.457528 03	.464878 03	.470777 03	.475876 03	.480480 03	.484787 03	.488891 03	.492883 03	.496833 03
498.0	.453309 03	.458007 03	.465362 03	.471263 03	.476366 03	.480979 03	.485281 03	.489387 03	.493381 03	.497333 03
498.5	.453786 03	.458487 03	.465845 03	.471750 03	.476855 03	.481471 03	.485775 03	.489883 03	.493879 03	.497833 03
499.0	.454263 03	.458967 03	.466329 03	.472236 03	.477344 03	.481963 03	.486269 03	.490379 03	.494377 03	.498333 03
499.5	.454740 03	.459446 03	.466813 03	.472723 03	.477834 03	.482454 03	.486763 03	.490879 03	.494875 03	.498833 03
500.0	.455218 03	.459926 03	.467296 03	.473210 03	.478323 03	.482946 03	.487257 03	.491371 03	.495373 03	.499333 03
500.5	.455695 03	.460406 03	.467780 03	.473697 03	.478812 03	.483438 03	.487751 03	.491867 03	.495871 03	.499833 03
501.0	.456172 03	.460886 03	.468263 03	.474183 03	.479302 03	.483930 03	.488245 03	.492363 03	.496369 03	.500333 03
501.5	.456649 03	.461365 03	.468747 03	.474670 03	.479791 03	.484421 03	.488739 03	.492859 03	.496867 03	.500833 03
502.0	.457127 03	.461845 03	.469231 03	.475157 03	.480280 03	.484913 03	.489232 03	.493355 03	.497365 03	.501333 03
502.5	.457604 03	.462325 03	.469714 03	.475643 03	.480770 03	.485405 03	.489726 03	.493851 03	.497863 03	.501833 03
503.0	.458081 03	.462805 03	.470198 03	.476130 03	.481259 03	.485896 03	.490220 03	.494347 03	.498361 03	.502333 03
503.5	.458559 03	.463284 03	.470682 03	.476617 03	.481748 03	.486388 03	.490714 03	.494843 03	.498859 03	.502833 03
504.0	.459036 03	.463764 03	.471165 03	.477104 03	.482236 03	.486880 03	.491208 03	.495339 03	.499357 03	.503333 03
504.5	.459513 03	.464244 03	.471649 03	.477590 03	.482727 03	.487372 03	.491702 03	.495835 03	.499855 03	.503833 03
505.0	.460000 03	.464724 03	.472133 03	.478077 03	.483217 03	.487863 03	.492196 03	.496331 03	.500354 03	.504333 03
505.5	.460488 03	.465204 03	.472616 03	.478564 03	.483706 03	.488355 03	.492690 03	.496827 03	.500852 03	.504833 03
506.0	.460985 03	.465684 03	.473100 03	.479051 03	.484195 03	.488847 03	.493184 03	.497323 03	.501350 03	.505333 03
506.5	.461483 03	.466183 03	.473584 03	.479537 03	.484685 03	.489339 03	.493678 03	.497819 03	.501848 03	.505833 03
507.0	.461980 03	.466683 03	.474087 03	.480044 03	.485174 03	.489830 03	.494172 03	.498315 03	.502346 03	.506333 03
507.5	.462377 03	.467123 03	.474551 03	.480511 03	.485664 03	.490322 03	.494666 03	.498811 03	.502844 03	.506833 03
508.0	.462855 03	.467603 03	.475035 03	.480998 03	.486153 03	.490816 03	.495160 03	.499307 03	.503342 03	.507333 03
508.5	.463332 03	.468083 03	.475519 03	.481484 03	.486642 03	.491306 03	.495654 03	.499803 03	.503840 03	.507833 03
509.0	.463810 03	.468563 03	.476002 03	.481971 03	.487132 03	.491798 03	.496148 03	.500299 03	.504338 03	.508333 03
509.5	.464287 03	.469043 03	.476486 03	.482458 03	.487621 03	.492289 03	.496642 03	.500795 03	.504836 03	.508833 03
510.0	.464764 03	.469523 03	.476970 03	.482945 03	.488111 03	.492781 03	.497135 03	.501291 03	.505334 03	.509333 03
510.5	.465242 03	.470003 03	.477454 03	.483432 03	.488600 03	.493273 03	.497629 03	.501787 03	.505832 03	.509833 03
511.0	.465719 03	.470482 03	.477937 03	.483918 03	.489090 03	.493765 03	.498123 03	.502283 03	.506330 03	.510333 03
511.5	.466197 03	.470962 03	.478421 03	.484405 03	.489579 03	.494256 03	.498617 03	.502779 03	.506828 03	.510833 03
512.0	.466674 03	.471442 03	.478905 03	.484892 03	.490068 03	.494748 03	.499111 03	.503275 03	.507326 03	.511333 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and r

r/Q	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
1.0	5.10321	5.70652	7.08326	.873457	.107419	.132330	.164237	.207225	.270554	.317805
1.1	6.03337	6.69665	8.19731	.997603	.121244	.147643	.181190	.226048	.291647	.339504
1.2	6.98204	7.70163	9.31818	.112210	.134950	.162731	.197798	.244392	.312101	.361267
1.3	7.94480	8.71749	10.4430	.124596	.148538	.177611	.214300	.262318	.332003	.382399
1.4	8.91844	9.74142	11.5700	.136939	.162031	.192301	.230129	.279875	.351426	.402984
1.5	9.90057	10.7714	12.6978	.149233	.175379	.206818	.245932	.297107	.370426	.423089
1.6	10.8894	11.8058	13.8254	.161478	.188631	.221176	.251474	.289052	.344269	.400000
1.7	11.8836	12.8437	14.9524	.173672	.201611	.235388	.274836	.330725	.407343	.462069
1.8	12.8821	13.8841	16.0783	.185817	.214808	.249466	.292035	.347167	.425332	.481029
1.9	13.8840	14.9264	17.2028	.197914	.227821	.263420	.307028	.363394	.443049	.499681
2.0	14.8888	15.9702	18.3258	.209961	.240795	.277259	.321088	.379424	.460517	.518853
2.1	15.8959	17.0149	19.4471	.221970	.253634	.290992	.336606	.395274	.477758	.536170
2.2	16.9049	18.0604	20.5667	.233933	.266403	.304627	.351195	.412950	.494791	.554051
2.3	17.9155	19.1063	21.6846	.245855	.279107	.318169	.365662	.426489	.511630	.571716
2.4	18.9274	20.1526	22.8007	.257739	.291749	.331626	.380018	.441877	.528292	.589181
2.5	19.9404	21.1990	23.9150	.269584	.304333	.345002	.392668	.457133	.544788	.606459
2.6	20.9543	22.2454	25.0277	.281395	.316862	.358303	.406200	.472265	.561130	.623565
2.7	21.9689	23.2918	26.1366	.293171	.329308	.371532	.420481	.487282	.577327	.640508
2.8	22.9841	24.3381	27.2479	.304915	.341768	.384695	.434655	.502189	.593389	.657300
2.9	23.9999	25.3842	28.3556	.316628	.354150	.397795	.450347	.516995	.609324	.673949
3.0	25.0161	26.4301	29.4617	.328311	.366447	.410834	.464163	.531705	.625139	.690464
3.1	26.0327	27.4757	30.5662	.339966	.378783	.423618	.477906	.546323	.640841	.706853
3.2	27.0495	28.5210	31.6694	.351594	.391038	.436747	.491580	.560856	.656377	.723122
3.3	28.0666	29.5660	32.7710	.363197	.403256	.449625	.505188	.575307	.671931	.739270
3.4	29.0839	30.6107	33.8713	.374774	.415437	.462455	.518735	.589681	.687329	.755326
3.5	30.1013	31.6550	34.9703	.386327	.427583	.475238	.532222	.603980	.702636	.771272
3.6	31.1188	32.6990	36.0679	.397658	.439696	.487977	.545653	.618210	.717856	.787121
3.7	32.1365	33.7426	37.1643	.409367	.451777	.500673	.559030	.632373	.732994	.802877
3.8	33.1542	34.7859	38.2595	.420854	.463828	.513329	.572356	.646472	.748052	.818544
3.9	34.1719	35.8288	39.3534	.432321	.475850	.525947	.585632	.660509	.763034	.834127
4.0	35.1897	36.8713	40.4463	.443769	.487943	.538527	.598862	.674488	.777944	.849628
4.1	36.2075	37.9135	41.5380	.455198	.499810	.551071	.612046	.688411	.792785	.865052
4.2	37.2252	38.9554	42.6286	.466604	.511750	.563581	.625186	.702280	.807559	.880402
4.3	38.2430	39.9968	43.7182	.478001	.523666	.576058	.638285	.716097	.822268	.895679
4.4	39.2607	41.0380	44.8068	.489377	.535557	.589518	.651343	.729865	.836917	.910888
4.5	40.2784	42.0784	45.8944	.500737	.547425	.600918	.662363	.743584	.851506	.926831
4.6	41.2961	43.1192	46.9811	.512081	.559271	.613303	.673745	.757257	.866038	.941110
4.7	42.3137	44.1593	48.0668	.523409	.571095	.625660	.690292	.770886	.880515	.956127
4.8	43.3312	45.1990	49.1516	.534723	.582877	.637989	.703264	.784472	.894940	.971085
4.9	44.3487	46.2385	50.2356	.546022	.594680	.650291	.716082	.798016	.909312	.985986
5.0	45.3661	47.2776	51.3187	.557307	.606443	.662568	.728928	.811520	.923636	1.000802

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and p

p/Q	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
5.1	.463835 01	.463164 01	.524009 01	.568579 01	.616107 01	.674020 01	.741742 01	.824985 01	.937911 01	.101562 02
5.2	.474007 01	.493548 01	.534024 01	.579837 01	.629912 01	.687047 01	.754526 01	.838413 01	.952140 01	.103036 02
5.3	.484179 01	.503930 01	.545631 01	.591083 01	.641620 01	.699251 01	.767250 01	.851804 01	.966324 01	.104505 02
5.4	.494351 01	.514309 01	.556430 01	.602317 01	.652310 01	.711433 01	.780006 01	.865160 01	.980465 01	.105969 02
5.5	.504521 01	.524684 01	.567222 01	.613538 01	.664984 01	.723592 01	.792704 01	.878482 01	.994563 01	.107429 02
5.6	.514691 01	.535057 01	.578006 01	.624748 01	.676611 01	.735730 01	.805375 01	.891770 01	.100662 02	.108884 02
5.7	.524860 01	.545427 01	.588764 01	.635946 01	.688282 01	.747640 01	.816120 01	.903026 01	.102264 02	.110334 02
5.8	.535028 01	.555794 01	.599554 01	.647134 01	.699907 01	.759945 01	.830640 01	.918251 01	.103662 02	.111700 02
5.9	.545195 01	.566158 01	.610318 01	.658310 01	.711518 01	.772022 01	.843235 01	.931446 01	.105056 02	.113222 02
6.0	.555362 01	.576520 01	.621076 01	.669476 01	.723114 01	.784000 01	.855608 01	.944610 01	.106460 02	.114659 02
6.1	.565528 01	.586879 01	.631827 01	.680632 01	.734695 01	.796120 01	.868354 01	.957746 01	.107833 02	.116093 02
6.2	.575692 01	.597235 01	.642571 01	.691778 01	.746263 01	.808142 01	.880879 01	.970854 01	.109217 02	.117523 02
6.3	.585856 01	.607589 01	.653310 01	.702914 01	.757837 01	.820146 01	.893381 01	.983935 01	.110597 02	.118949 02
6.4	.596019 01	.617940 01	.664043 01	.714040 01	.769358 01	.832132 01	.905862 01	.996969 01	.111974 02	.120372 02
6.5	.606182 01	.628289 01	.674769 01	.725158 01	.780886 01	.844102 01	.918323 01	.101002 02	.113347 02	.121791 02
6.6	.616343 01	.638635 01	.685491 01	.736266 01	.792401 01	.856056 01	.930762 01	.102302 02	.114718 02	.123206 02
6.7	.626504 01	.648979 01	.696206 01	.747365 01	.803934 01	.867954 01	.943102 01	.103600 02	.116085 02	.124618 02
6.8	.636664 01	.659321 01	.706916 01	.758456 01	.815396 01	.879916 01	.955582 01	.104895 02	.117450 02	.126027 02
6.9	.646823 01	.669660 01	.717621 01	.769538 01	.826875 01	.891323 01	.967963 01	.106188 02	.118812 02	.127432 02
7.0	.656981 01	.679937 01	.728321 01	.780612 01	.838343 01	.903715 01	.980325 01	.107479 02	.120170 02	.128834 02
7.1	.667138 01	.690332 01	.739015 01	.791678 01	.849800 01	.915592 01	.992669 01	.108767 02	.121526 02	.130233 02
7.2	.677295 01	.700664 01	.749705 01	.802736 01	.861246 01	.927455 01	.100500 02	.110054 02	.122480 02	.131630 02
7.3	.687451 01	.710995 01	.760389 01	.813787 01	.872681 01	.939305 01	.101730 02	.111330 02	.124230 02	.133023 02
7.4	.697606 01	.721323 01	.771069 01	.824830 01	.884106 01	.951141 01	.102960 02	.112620 02	.125578 02	.134413 02
7.5	.707760 01	.731649 01	.781744 01	.835865 01	.895520 01	.962963 01	.104167 02	.113900 02	.126924 02	.135801 02
7.6	.717914 01	.741974 01	.792415 01	.846893 01	.906924 01	.974773 01	.105417 02	.115178 02	.128267 02	.137185 02
7.7	.728066 01	.752296 01	.803081 01	.857914 01	.918319 01	.986569 01	.106637 02	.116454 02	.129608 02	.138567 02
7.8	.738218 01	.762616 01	.813742 01	.868928 01	.929704 01	.998353 01	.107860 02	.117728 02	.130946 02	.139947 02
7.9	.748370 01	.772934 01	.824400 01	.879935 01	.941680 01	.101013 02	.109081 02	.119000 02	.132282 02	.141323 02
8.0	.758520 01	.783251 01	.835053 01	.890936 01	.952446 01	.102109 02	.110301 02	.120271 02	.133616 02	.142697 02
8.1	.768670 01	.793565 01	.845701 01	.901930 01	.963803 01	.103363 02	.111519 02	.121539 02	.134947 02	.144069 02
8.2	.778813 01	.803878 01	.856346 01	.912917 01	.975151 01	.104537 02	.112736 02	.122806 02	.136276 02	.145438 02
8.3	.788967 01	.814189 01	.866987 01	.923899 01	.986491 01	.105710 02	.113951 02	.124071 02	.137603 02	.146805 02
8.4	.799114 01	.824498 01	.877623 01	.934874 01	.997822 01	.106881 02	.115165 02	.125334 02	.138929 02	.148170 02
8.5	.809261 01	.834805 01	.888256 01	.945843 01	.100914 02	.108051 02	.116376 02	.126596 02	.140251 02	.149532 02
8.6	.819407 01	.845111 01	.898885 01	.956805 01	.102046 02	.109221 02	.117589 02	.127856 02	.141572 02	.150892 02
8.7	.829553 01	.855415 01	.909510 01	.967763 01	.103177 02	.110389 02	.118799 02	.129115 02	.142891 02	.152249 02
8.8	.839698 01	.865717 01	.920132 01	.978714 01	.104306 02	.111556 02	.120008 02	.130371 02	.144208 02	.153605 02
8.9	.849842 01	.876018 01	.930750 01	.989660 01	.105435 02	.112722 02	.121215 02	.131627 02	.145523 02	.154958 02
9.0	.859985 01	.886317 01	.941364 01	.100060 02	.106554 02	.113889 02	.122421 02	.132880 02	.146837 02	.156309 02
9.1	.870126 01	.896614 01	.951975 01	.101153 02	.107651 02	.115052 02	.123626 02	.134133 02	.148148 02	.157659 02
9.2	.880270 01	.906910 01	.962582 01	.102246 02	.108848 02	.116215 02	.124830 02	.135383 02	.149457 02	.159006 02
9.3	.890411 01	.917204 01	.973186 01	.103339 02	.109944 02	.117377 02	.126033 02	.136633 02	.150755 02	.160351 02
9.4	.900552 01	.927497 01	.983787 01	.104431 02	.111059 02	.118539 02	.127203 02	.137861 02	.152071 02	.161694 02
9.5	.910692 01	.937788 01	.994384 01	.105522 02	.112194 02	.119699 02	.128435 02	.139127 02	.153375 02	.163035 02
9.6	.920832 01	.948077 01	.100498 02	.106613 02	.113348 02	.120859 02	.129634 02	.140372 02	.154678 02	.164375 02
9.7	.930971 01	.958366 01	.101557 02	.107703 02	.114444 02	.122018 02	.130832 02	.141616 02	.155979 02	.165712 02
9.8	.941109 01	.968652 01	.102616 02	.108793 02	.115584 02	.123175 02	.132029 02	.142858 02	.157278 02	.167048 02
9.9	.951247 01	.979338 01	.103674 02	.109882 02	.116686 02	.124332 02	.133225 02	.144100 02	.158576 02	.168382 02
10.0	.961384 01	.989222 01	.104732 02	.110971 02	.117807 02	.125489 02	.134420 02	.145339 02	.159872 02	.169714 02

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.475000	.450000	.430000	.350000	.300000	.250000	.150000	.100000	.075000
10.1	971520 02	999534 01	105790 02	112060 02	118928 02	126644 02	146570 02	161166 02	171844 02
10.2	981656 01	100979 02	106848 02	113148 02	120040 02	127790 02	147815 02	162459 02	172373 02
10.3	991792 01	102007 02	107965 02	114235 02	121167 02	128952 02	149051 02	163751 02	173699 02
10.4	100193 02	103034 02	108962 02	115323 02	122286 02	130105 02	150286 02	165041 02	175025 02
10.5	101206 02	104062 02	110019 02	116409 02	123804 02	131257 02	151520 02	166329 02	176340 02
10.6	102219 02	105090 02	111075 02	117409 02	124522 02	132409 02	152752 02	167616 02	177670 02
10.7	103233 02	106117 02	112131 02	118561 02	125639 02	133559 02	153904 02	168902 02	178990 02
10.8	104246 02	107144 02	113187 02	119667 02	126755 02	134709 02	155214 02	170186 02	180309 02
10.9	105259 02	108172 02	114243 02	120752 02	127871 02	135858 02	156443 02	171469 02	181626 02
11.0	106272 02	109199 02	115298 02	121836 02	128937 02	137007 02	157671 02	172750 02	182942 02
11.1	107285 02	110226 02	116353 02	122920 02	130101 02	138155 02	158898 02	174030 02	184256 02
11.2	108298 02	111253 02	117408 02	124004 02	131216 02	139362 02	160124 02	175309 02	185569 02
11.3	109311 02	112279 02	118463 02	125088 02	132329 02	140448 02	161348 02	176586 02	186880 02
11.4	110324 02	113306 02	119517 02	126171 02	133443 02	141594 02	162572 02	177863 02	188190 02
11.5	111337 02	114332 02	120571 02	127253 02	134555 02	142739 02	163795 02	179137 02	189499 02
11.6	112350 02	115359 02	121625 02	128336 02	135667 02	143883 02	165016 02	180411 02	190805 02
11.7	113363 02	116385 02	122679 02	129417 02	136779 02	145027 02	166237 02	181684 02	192111 02
11.8	114376 02	117411 02	123732 02	130499 02	137890 02	146170 02	167457 02	182955 02	193415 02
11.9	115388 02	118437 02	124785 02	131580 02	139001 02	147312 02	168675 02	184225 02	194718 02
12.0	116401 02	119463 02	125838 02	132661 02	140111 02	148454 02	169893 02	185493 02	196020 02
12.1	117413 02	120489 02	126891 02	133741 02	141221 02	149595 02	171110 02	186761 02	197320 02
12.2	118426 02	121515 02	127944 02	134822 02	142330 02	150736 02	172326 02	188028 02	198619 02
12.3	119439 02	122540 02	128996 02	135901 02	143439 02	151876 02	173541 02	189293 02	199917 02
12.4	120451 02	123566 02	130048 02	136981 02	144547 02	153015 02	174755 02	190557 02	201213 02
12.5	121463 02	124591 02	131100 02	138060 02	145655 02	154154 02	175968 02	191820 02	202508 02
12.6	122476 02	125617 02	132151 02	139139 02	146762 02	155292 02	177180 02	193082 02	203802 02
12.7	123488 02	126642 02	133203 02	140217 02	147869 02	156430 02	178391 02	194343 02	205095 02
12.8	124500 02	127667 02	134254 02	141295 02	148976 02	157567 02	179601 02	195603 02	206386 02
12.9	125513 02	128692 02	135305 02	142373 02	150082 02	158703 02	180811 02	196862 02	207676 02
13.0	126525 02	129717 02	136356 02	143451 02	151187 02	159839 02	182020 02	198119 02	208966 02
13.1	127537 02	130743 02	137407 02	144530 02	152262 02	160974 02	183232 02	199382 02	210269 02
13.2	128549 02	131767 02	138457 02	145605 02	153397 02	162109 02	184435 02	200632 02	211540 02
13.3	129561 02	132791 02	139513 02	146678 02	154520 02	163277 02	185646 02	201880 02	212811 02
13.4	130573 02	133816 02	140557 02	147758 02	155646 02	164377 02	186846 02	203140 02	214111 02
13.5	131585 02	134840 02	141640 02	148840 02	156762 02	165492 02	188046 02	204399 02	215382 02
13.6	132597 02	135865 02	142725 02	149929 02	157882 02	166643 02	189255 02	205644 02	216676 02
13.7	133610 02	136890 02	143810 02	151017 02	159001 02	167797 02	190462 02	206899 02	217955 02
13.8	134621 02	137913 02	144895 02	152060 02	160117 02	168907 02	191660 02	208145 02	219238 02
13.9	135634 02	138936 02	145980 02	153109 02	161221 02	170018 02	192862 02	209399 02	220520 02
14.0	136646 02	139961 02	146965 02	154209 02	162321 02	171169 02	194062 02	210641 02	221795 02
14.1	137659 02	140984 02	147950 02	155307 02	163423 02	172329 02	195262 02	211894 02	223076 02
14.2	138668 02	142009 02	148935 02	156405 02	164524 02	173429 02	196462 02	213134 02	224340 02
14.3	139677 02	143032 02	149920 02	157487 02	165624 02	174530 02	197662 02	214387 02	225602 02
14.4	140691 02	144056 02	150947 02	158505 02	166724 02	175637 02	198850 02	215624 02	226860 02
14.5	141704 02	145079 02	151960 02	159561 02	167824 02	176744 02	200042 02	216860 02	228119 02
14.6	142714 02	146104 02	152973 02	160611 02	168924 02	177844 02	201251 02	218100 02	229443 02
14.7	143727 02	147127 02	153986 02	161678 02	170021 02	178944 02	202462 02	219340 02	230711 02
14.8	144737 02	148150 02	155000 02	162746 02	171121 02	180042 02	203642 02	220592 02	231984 02
14.9	145747 02	149173 02	156013 02	163811 02	172201 02	181154 02	204822 02	221822 02	233252 02
15.0	146760 02	150196 02	157026 02	164940 02	173217 02	182251 02	206030 02	223071 02	234522 02
15.1	147773 02	151219 02	158049 02	166067 02	174232 02	183362 02	207242 02	224320 02	235792 02
15.2	148786 02	152242 02	159062 02	167194 02	175247 02	184473 02	208451 02	225567 02	237056 02
15.3	149799 02	153265 02	160075 02	168341 02	176262 02	185584 02	209662 02	226800 02	238320 02
15.4	150812 02	154288 02	161088 02	169489 02	177277 02	186695 02	210873 02	228033 02	239586 02
15.5	151825 02	155311 02	162101 02	170637 02	178292 02	187806 02	212084 02	229244 02	240850 02
15.6	152838 02	156334 02	163114 02	171786 02	179307 02	188917 02	213295 02	230455 02	242112 02
15.7	153851 02	157357 02	164127 02	172935 02	180318 02	190028 02	214506 02	231666 02	243376 02
15.8	154864 02	158380 02	165140 02	174084 02	181329 02	191139 02	215717 02	232877 02	244635 02
15.9	155877 02	159403 02	166153 02	175232 02	182340 02	192250 02	216928 02	234088 02	245894 02
16.0	156890 02	160426 02	167166 02	176381 02	183351 02	193361 02	218139 02	235299 02	247153 02
16.1	157903 02	161449 02	168179 02	177532 02	184362 02	194472 02	219350 02	236510 02	248412 02
16.2	158916 02	162472 02	169192 02	178683 02	185373 02	195583 02	220561 02	237721 02	249671 02
16.3	159929 02	163495 02	170205 02	179834 02	186384 02	196694 02	221772 02	238932 02	250930 02
16.4	160942 02	164518 02	171218 02	180985 02	187395 02	197805 02	222983 02	240143 02	252189 02
16.5	161955 02	165541 02	172231 02	182136 02	188406 02	198916 02	224194 02	241354 02	253448 02
16.6	162968 02	166564 02	173244 02	183287 02	189417 02	200027 02	225405 02	242565 02	254707 02
16.7	163981 02	167587 02	174257 02	184438 02	190428 02	201138 02	226616 02	243776 02	255966 02
16.8	164994 02	168610 02	175270 02	185589 02	191439 02	202249 02	227827 02	244987 02	257225 02
16.9	166007 02	169633 02	176283 02	186740 02	192450 02	203360 02	229038 02	246198 02	258484 02
17.0	167020 02	170656 02	177296 02	187891 02	193461 02	204471 02	230249 02	247409 02	259743 02

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
17.20	.169002 02	.172689 02	.180332 02	.188464 02	.197253 02	.207122 02	.218439 02	.232131 02	.250136 02	.262225 02
17.40	.171023 02	.174732 02	.182419 02	.190598 02	.199475 02	.209356 02	.220731 02	.234490 02	.252580 02	.264703 02
17.60	.173044 02	.176775 02	.184506 02	.192730 02	.201655 02	.211588 02	.223021 02	.236847 02	.255020 02	.267197 02
17.80	.175065 02	.178818 02	.186593 02	.194862 02	.203635 02	.213519 02	.225009 02	.239202 02	.257459 02	.269689 02
18.00	.177086 02	.180860 02	.188679 02	.196993 02	.205814 02	.215649 02	.227195 02	.241555 02	.259894 02	.272178 02
18.20	.179107 02	.182902 02	.190765 02	.199123 02	.207991 02	.217877 02	.229480 02	.243905 02	.262327 02	.274664 02
18.40	.181127 02	.184944 02	.192850 02	.201253 02	.210168 02	.219604 02	.231264 02	.246254 02	.264758 02	.277147 02
18.60	.183148 02	.186986 02	.194934 02	.203382 02	.212343 02	.221820 02	.233445 02	.248601 02	.267186 02	.279628 02
18.80	.185168 02	.189027 02	.197018 02	.205510 02	.214518 02	.224055 02	.235726 02	.250946 02	.269612 02	.282106 02
19.00	.187189 02	.191069 02	.199102 02	.207638 02	.216681 02	.226275 02	.238004 02	.253289 02	.272036 02	.284581 02
19.20	.189209 02	.193110 02	.201185 02	.209764 02	.219064 02	.229400 02	.241281 02	.255630 02	.274457 02	.287054 02
19.40	.191229 02	.195151 02	.203268 02	.211890 02	.221236 02	.231621 02	.243557 02	.257969 02	.276876 02	.289524 02
19.60	.193249 02	.197191 02	.205350 02	.214016 02	.223406 02	.233841 02	.246031 02	.260306 02	.279293 02	.291992 02
19.80	.195269 02	.199232 02	.207432 02	.216141 02	.225576 02	.236059 02	.248404 02	.262642 02	.281707 02	.294457 02
20.00	.197289 02	.201272 02	.209514 02	.218265 02	.227745 02	.238277 02	.250375 02	.264976 02	.284120 02	.296920 02
20.20	.199309 02	.203312 02	.211595 02	.220388 02	.229914 02	.240493 02	.252645 02	.267308 02	.286530 02	.299381 02
20.40	.201328 02	.205352 02	.213675 02	.222511 02	.232081 02	.242709 02	.254913 02	.269638 02	.288938 02	.301839 02
20.60	.203348 02	.207391 02	.215756 02	.224633 02	.234347 02	.244923 02	.257181 02	.271967 02	.291345 02	.304295 02
20.80	.205367 02	.209431 02	.217836 02	.226755 02	.236413 02	.246936 02	.259246 02	.274295 02	.293749 02	.306748 02
21.00	.207387 02	.211470 02	.219915 02	.228876 02	.238578 02	.249348 02	.261711 02	.276620 02	.296151 02	.309200 02
21.20	.209406 02	.213509 02	.221994 02	.230997 02	.240742 02	.251559 02	.263374 02	.278944 02	.298551 02	.311649 02
21.40	.211425 02	.215548 02	.224073 02	.233116 02	.242805 02	.253769 02	.265636 02	.281266 02	.300949 02	.314096 02
21.60	.213444 02	.217586 02	.226151 02	.235236 02	.244968 02	.255978 02	.267997 02	.283507 02	.303336 02	.316541 02
21.80	.215463 02	.219625 02	.228229 02	.237354 02	.247029 02	.258086 02	.270156 02	.285507 02	.305340 02	.318584 02
22.00	.217482 02	.221663 02	.230307 02	.239473 02	.249290 02	.260393 02	.272515 02	.287825 02	.307613 02	.320842 02
22.20	.219501 02	.223701 02	.232384 02	.241590 02	.251550 02	.262599 02	.274722 02	.290541 02	.310524 02	.323863 02
22.40	.221520 02	.225739 02	.234461 02	.243707 02	.253710 02	.264804 02	.277027 02	.292856 02	.312913 02	.326300 02
22.60	.223539 02	.227777 02	.236537 02	.245824 02	.255868 02	.267008 02	.279282 02	.295169 02	.315300 02	.328734 02
22.80	.225557 02	.229815 02	.238613 02	.247940 02	.258026 02	.269211 02	.281581 02	.297481 02	.317685 02	.331167 02
23.00	.227576 02	.231852 02	.240689 02	.250055 02	.260184 02	.271413 02	.283888 02	.299792 02	.320069 02	.333597 02
23.20	.229594 02	.233889 02	.242765 02	.252170 02	.262340 02	.273615 02	.286539 02	.302101 02	.322451 02	.336026 02
23.40	.231613 02	.235927 02	.244840 02	.254285 02	.264496 02	.275815 02	.288769 02	.304409 02	.324831 02	.338453 02
23.60	.233631 02	.237963 02	.246915 02	.256399 02	.266651 02	.278015 02	.291038 02	.306716 02	.327210 02	.340878 02
23.80	.235649 02	.240000 02	.248989 02	.258512 02	.268806 02	.280214 02	.293286 02	.309021 02	.329587 02	.343301 02
24.00	.237667 02	.242037 02	.251063 02	.260625 02	.270960 02	.282412 02	.295533 02	.311325 02	.331962 02	.345723 02
24.20	.239685 02	.244073 02	.253133 02	.262738 02	.273113 02	.284609 02	.297779 02	.313627 02	.334336 02	.348142 02
24.40	.241703 02	.246110 02	.255211 02	.264850 02	.275265 02	.286805 02	.300024 02	.315928 02	.336708 02	.350580 02
24.60	.243721 02	.248136 02	.257284 02	.266961 02	.277417 02	.289000 02	.302268 02	.318229 02	.339079 02	.352976 02
24.80	.245739 02	.250162 02	.259357 02	.269072 02	.279459 02	.291195 02	.304510 02	.320527 02	.341448 02	.355390 02
25.00	.247757 02	.252210 02	.261430 02	.271183 02	.281719 02	.293389 02	.306752 02	.322825 02	.343816 02	.357803 02
25.20	.249775 02	.254254 02	.263502 02	.273293 02	.283869 02	.295581 02	.308993 02	.325121 02	.346182 02	.360214 02
25.40	.251792 02	.256289 02	.265574 02	.275403 02	.286019 02	.297774 02	.311233 02	.327446 02	.348547 02	.362623 02
25.60	.253810 02	.258325 02	.267646 02	.277512 02	.288167 02	.299965 02	.313471 02	.329710 02	.350910 02	.365031 02
25.80	.255827 02	.260360 02	.269718 02	.279621 02	.290316 02	.302156 02	.315709 02	.332003 02	.353271 02	.367437 02
26.00	.257845 02	.262395 02	.271789 02	.281730 02	.292463 02	.304346 02	.317946 02	.334295 02	.355632 02	.369841 02
26.20	.259863 02	.264433 02	.273866 02	.283835 02	.294517 02	.306402 02	.320741 02	.337158 02	.358580 02	.372885 02
26.40	.261881 02	.266468 02	.275937 02	.285939 02	.296696 02	.308519 02	.323353 02	.340019 02	.361526 02	.375845 02
26.60	.263899 02	.268502 02	.278000 02	.288032 02	.298840 02	.310665 02	.325902 02	.342878 02	.364470 02	.378444 02
26.80	.265917 02	.270532 02	.279966 02	.289999 02	.300840 02	.312685 02	.328326 02	.345470 02	.367412 02	.381840 02
27.00	.267935 02	.272561 02	.281930 02	.291992 02	.302863 02	.314719 02	.330752 02	.348252 02	.370352 02	.384834 02
27.20	.269953 02	.274589 02	.283898 02	.293999 02	.304900 02	.316765 02	.332993 02	.350992 02	.373352 02	.388444 02
27.40	.271971 02	.276617 02	.285869 02	.295999 02	.306930 02	.318765 02	.335193 02	.353492 02	.376352 02	.390944 02
27.60	.273989 02	.278645 02	.287837 02	.297999 02	.308960 02	.320765 02	.337393 02	.355892 02	.378852 02	.393444 02
27.80	.275997 02	.280663 02	.289795 02	.299999 02	.310900 02	.322665 02	.339493 02	.358092 02	.381092 02	.395544 02
28.00	.277995 02	.282671 02	.291743 02	.301999 02	.312930 02	.324665 02	.341493 02	.360092 02	.382492 02	.396644 02

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and p

$p \backslash Q$	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
27.50	.272973 02	.277655 02	.287314 02	.297530 02	.308552 02	.320747 02	.334694 02	.351446 02	.373290 02	.387825 02
27.75	.275495 02	.281138 02	.289900 02	.300161 02	.311231 02	.323476 02	.337460 02	.354299 02	.376159 02	.390614 02
28.00	.278016 02	.283740 02	.292486 02	.302791 02	.313909 02	.326205 02	.340266 02	.357150 02	.379019 02	.393481 02
28.25	.280537 02	.286262 02	.295072 02	.305421 02	.316586 02	.328933 02	.343050 02	.359999 02	.381879 02	.396346 02
28.50	.283057 02	.288782 02	.297657 02	.308051 02	.319262 02	.331659 02	.345832 02	.362847 02	.384721 02	.399190 02
28.75	.285578 02	.291303 02	.300241 02	.310679 02	.321937 02	.334385 02	.348614 02	.365694 02	.387549 02	.402029 02
29.00	.288099 02	.293824 02	.302825 02	.313308 02	.324612 02	.337109 02	.351394 02	.368538 02	.390375 02	.404879 02
29.25	.290619 02	.296344 02	.305409 02	.315935 02	.327285 02	.339833 02	.354172 02	.371382 02	.393299 02	.407803 02
29.50	.293140 02	.298865 02	.307993 02	.318562 02	.329959 02	.342555 02	.356950 02	.374223 02	.396212 02	.410777 02
29.75	.295660 02	.301385 02	.310576 02	.321189 02	.332631 02	.345277 02	.359727 02	.377064 02	.399642 02	.414649 02
30.00	.298181 02	.303906 02	.313159 02	.323815 02	.335302 02	.347997 02	.362502 02	.379903 02	.402560 02	.417619 02
30.25	.300701 02	.306426 02	.315741 02	.326440 02	.337973 02	.350717 02	.365276 02	.382740 02	.405477 02	.420587 02
30.50	.303221 02	.308946 02	.318323 02	.329065 02	.340643 02	.353436 02	.368049 02	.385576 02	.408392 02	.423553 02
30.75	.305741 02	.311466 02	.320905 02	.331699 02	.343313 02	.356154 02	.370821 02	.388410 02	.411306 02	.426517 02
31.00	.308261 02	.313986 02	.323486 02	.334314 02	.345981 02	.358871 02	.373591 02	.391244 02	.414217 02	.429479 02
31.25	.310781 02	.316506 02	.326067 02	.336937 02	.348649 02	.361587 02	.376361 02	.394076 02	.417127 02	.432440 02
31.50	.313301 02	.319026 02	.328648 02	.339560 02	.351317 02	.364302 02	.379129 02	.396906 02	.420036 02	.435398 02
31.75	.315820 02	.321545 02	.331229 02	.342182 02	.353983 02	.367016 02	.381897 02	.399735 02	.422942 02	.438355 02
32.00	.318340 02	.324065 02	.333809 02	.344804 02	.356649 02	.369730 02	.384663 02	.402563 02	.425647 02	.441309 02
32.25	.320860 02	.326585 02	.336380 02	.347426 02	.359315 02	.372442 02	.387428 02	.405389 02	.428751 02	.444426 02
32.50	.323379 02	.329104 02	.338968 02	.350047 02	.361979 02	.375154 02	.390193 02	.408215 02	.431653 02	.447213 02
32.75	.325899 02	.331624 02	.341547 02	.352667 02	.364643 02	.377865 02	.392956 02	.411039 02	.434553 02	.450163 02
33.00	.328418 02	.334143 02	.344126 02	.355287 02	.367263 02	.380485 02	.395718 02	.413861 02	.437452 02	.453110 02
33.25	.330937 02	.336662 02	.346704 02	.357907 02	.369969 02	.383285 02	.398479 02	.416683 02	.440349 02	.456056 02
33.50	.333457 02	.339182 02	.349283 02	.360526 02	.372631 02	.385993 02	.401239 02	.419503 02	.443245 02	.459000 02
33.75	.335976 02	.341701 02	.351861 02	.363157 02	.375253 02	.388701 02	.403998 02	.422322 02	.446139 02	.461943 02
34.00	.338495 02	.344220 02	.354438 02	.365763 02	.377954 02	.391468 02	.406756 02	.425140 02	.449032 02	.464884 02
34.25	.341014 02	.346739 02	.357016 02	.368380 02	.380614 02	.394114 02	.409356 02	.427795 02	.451923 02	.467823 02
34.50	.343533 02	.349258 02	.359593 02	.370998 02	.383274 02	.396819 02	.412270 02	.430772 02	.454813 02	.470761 02
34.75	.346052 02	.351777 02	.362170 02	.373615 02	.385933 02	.399524 02	.415025 02	.433586 02	.457731 02	.473697 02
35.00	.348571 02	.354296 02	.364746 02	.376231 02	.388591 02	.402228 02	.417780 02	.436399 02	.460588 02	.476631 02
35.25	.351090 02	.356815 02	.367322 02	.378847 02	.391249 02	.404931 02	.420533 02	.439211 02	.463473 02	.479564 02
35.50	.353609 02	.359334 02	.369898 02	.381463 02	.393907 02	.407633 02	.423286 02	.442022 02	.466358 02	.482495 02
35.75	.356127 02	.361852 02	.372474 02	.384078 02	.396564 02	.410335 02	.426037 02	.444832 02	.469240 02	.485425 02
36.00	.358645 02	.364370 02	.375049 02	.386653 02	.399220 02	.413036 02	.428788 02	.447641 02	.472122 02	.488353 02
36.25	.361164 02	.366889 02	.377625 02	.389230 02	.401876 02	.415736 02	.431538 02	.450448 02	.475002 02	.491280 02
36.50	.363683 02	.369408 02	.380199 02	.391821 02	.404531 02	.418436 02	.434287 02	.453255 02	.477881 02	.494205 02
36.75	.366202 02	.371927 02	.382774 02	.394355 02	.407185 02	.421135 02	.437035 02	.456060 02	.480758 02	.497129 02
37.00	.368721 02	.374446 02	.385348 02	.396989 02	.409839 02	.423833 02	.439782 02	.458865 02	.483634 02	.500051 02
37.25	.371240 02	.376965 02	.387923 02	.399576 02	.412493 02	.426531 02	.442529 02	.461668 02	.486509 02	.502972 02
37.50	.373759 02	.379484 02	.390496 02	.402373 02	.415146 02	.429227 02	.445274 02	.464470 02	.489382 02	.505891 02
37.75	.376278 02	.381993 02	.393070 02	.404985 02	.417758 02	.431924 02	.448019 02	.467271 02	.492255 02	.508809 02
38.00	.378797 02	.384512 02	.395639 02	.407597 02	.420451 02	.434619 02	.450763 02	.470072 02	.495126 02	.511726 02
38.25	.381316 02	.387031 02	.398198 02	.410180 02	.423082 02	.437314 02	.453506 02	.472871 02	.497996 02	.514641 02
38.50	.383835 02	.389550 02	.400767 02	.412789 02	.425753 02	.440008 02	.456269 02	.475669 02	.500864 02	.517555 02
38.75	.386354 02	.392069 02	.403336 02	.415380 02	.428403 02	.442642 02	.458990 02	.478467 02	.503732 02	.520467 02
39.00	.388873 02	.394588 02	.405905 02	.417987 02	.431053 02	.445395 02	.461730 02	.481263 02	.506598 02	.523378 02
39.25	.391392 02	.397107 02	.408464 02	.420586 02	.433703 02	.448077 02	.464470 02	.484058 02	.509463 02	.526288 02
39.50	.393911 02	.399626 02	.411023 02	.423189 02	.436353 02	.450779 02	.467209 02	.486853 02	.512326 02	.529197 02
39.75	.396430 02	.402145 02	.413592 02	.425807 02	.438993 02	.453497 02	.469948 02	.489646 02	.515189 02	.532104 02

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and λ

λ/Q	.453360	.460000	.466640	.473280	.479920	.486560	.493200	.499840	.506480	.513120	.519760	.526400	.533040	.539680	.546320	.552960	.559600	.566240	.572880	.579520	.586160	.592800	.599440	.606080	.612720	.619360	.626000	.632640	.639280	.645920	.652560	.659200	.665840	.672480	.679120	.685760	.692400	.699040	.705680	.712320	.718960	.725600	.732240	.738880	.745520	.752160	.758800	.765440	.772080	.778720	.785360	.792000	.798640	.805280	.811920	.818560	.825200	.831840	.838480	.845120	.851760	.858400	.865040	.871680	.878320	.884960	.891600	.898240	.904880	.911520	.918160	.924800	.931440	.938080	.944720	.951360	.958000	.964640	.971280	.977920	.984560	.991200	.997840	1.004480	1.011120	1.017760	1.024400	1.031040	1.037680	1.044320	1.050960	1.057600	1.064240	1.070880	1.077520	1.084160	1.090800	1.097440	1.104080	1.110720	1.117360	1.124000	1.130640	1.137280	1.143920	1.150560	1.157200	1.163840	1.170480	1.177120	1.183760	1.190400	1.197040	1.203680	1.210320	1.216960	1.223600	1.230240	1.236880	1.243520	1.250160	1.256800	1.263440	1.270080	1.276720	1.283360	1.290000	1.296640	1.303280	1.309920	1.316560	1.323200	1.329840	1.336480	1.343120	1.349760	1.356400	1.363040	1.369680	1.376320	1.382960	1.389600	1.396240	1.402880	1.409520	1.416160	1.422800	1.429440	1.436080	1.442720	1.449360	1.456000	1.462640	1.469280	1.475920	1.482560	1.489200	1.495840	1.502480	1.509120	1.515760	1.522400	1.529040	1.535680	1.542320	1.548960	1.555600	1.562240	1.568880	1.575520	1.582160	1.588800	1.595440	1.602080	1.608720	1.615360	1.622000	1.628640	1.635280	1.641920	1.648560	1.655200	1.661840	1.668480	1.675120	1.681760	1.688400	1.695040	1.701680	1.708320	1.714960	1.721600	1.728240	1.734880	1.741520	1.748160	1.754800	1.761440	1.768080	1.774720	1.781360	1.788000	1.794640	1.801280	1.807920	1.814560	1.821200	1.827840	1.834480	1.841120	1.847760	1.854400	1.861040	1.867680	1.874320	1.880960	1.887600	1.894240	1.900880	1.907520	1.914160	1.920800	1.927440	1.934080	1.940720	1.947360	1.954000	1.960640	1.967280	1.973920	1.980560	1.987200	1.993840	2.000480	2.007120	2.013760	2.020400	2.027040	2.033680	2.040320	2.046960	2.053600	2.060240	2.066880	2.073520	2.080160	2.086800	2.093440	2.100080	2.106720	2.113360	2.120000	2.126640	2.133280	2.139920	2.146560	2.153200	2.159840	2.166480	2.173120	2.179760	2.186400	2.193040	2.199680	2.206320	2.212960	2.219600	2.226240	2.232880	2.239520	2.246160	2.252800	2.259440	2.266080	2.272720	2.279360	2.286000	2.292640	2.299280	2.305920	2.312560	2.319200	2.325840	2.332480	2.339120	2.345760	2.352400	2.359040	2.365680	2.372320	2.378960	2.385600	2.392240	2.398880	2.405520	2.412160	2.418800	2.425440	2.432080	2.438720	2.445360	2.452000	2.458640	2.465280	2.471920	2.478560	2.485200	2.491840	2.498480	2.505120	2.511760	2.518400	2.525040	2.531680	2.538320	2.544960	2.551600	2.558240	2.564880	2.571520	2.578160	2.584800	2.591440	2.598080	2.604720	2.611360	2.618000	2.624640	2.631280	2.637920	2.644560	2.651200	2.657840	2.664480	2.671120	2.677760	2.684400	2.691040	2.697680	2.704320	2.710960	2.717600	2.724240	2.730880	2.737520	2.744160	2.750800	2.757440	2.764080	2.770720	2.777360	2.784000	2.790640	2.797280	2.803920	2.810560	2.817200	2.823840	2.830480	2.837120	2.843760	2.850400	2.857040	2.863680	2.870320	2.876960	2.883600	2.890240	2.896880	2.903520	2.910160	2.916800	2.923440	2.930080	2.936720	2.943360	2.950000	2.956640	2.963280	2.969920	2.976560	2.983200	2.989840	2.996480	3.003120	3.009760	3.016400	3.023040	3.029680	3.036320	3.042960	3.049600	3.056240	3.062880	3.069520	3.076160	3.082800	3.089440	3.096080	3.102720	3.109360	3.116000	3.122640	3.129280	3.135920	3.142560	3.149200	3.155840	3.162480	3.169120	3.175760	3.182400	3.189040	3.195680	3.202320	3.208960	3.215600	3.222240	3.228880	3.235520	3.242160	3.248800	3.255440	3.262080	3.268720	3.275360	3.282000	3.288640	3.295280	3.301920	3.308560	3.315200	3.321840	3.328480	3.335120	3.341760	3.348400	3.355040	3.361680	3.368320	3.374960	3.381600	3.388240	3.394880	3.401520	3.408160	3.414800	3.421440	3.428080	3.434720	3.441360	3.448000	3.454640	3.461280	3.467920	3.474560	3.481200	3.487840	3.494480	3.501120	3.507760	3.514400	3.521040	3.527680	3.534320	3.540960	3.547600	3.554240	3.560880	3.567520	3.574160	3.580800	3.587440	3.594080	3.600720	3.607360	3.614000	3.620640	3.627280	3.633920	3.640560	3.647200	3.653840	3.660480	3.667120	3.673760	3.680400	3.687040	3.693680	3.700320	3.706960	3.713600	3.720240	3.726880	3.733520	3.740160	3.746800	3.753440	3.760080	3.766720	3.773360	3.780000	3.786640	3.793280	3.800000	3.806640	3.813280	3.819920	3.826560	3.833200	3.839840	3.846480	3.853120	3.859760	3.866400	3.873040	3.879680	3.886320	3.892960	3.899600	3.906240	3.912880	3.919520	3.926160	3.932800	3.939440	3.946080	3.952720	3.959360	3.966000	3.972640	3.979280	3.985920	3.992560	3.999200	4.005840	4.012480	4.019120	4.025760	4.032400	4.039040	4.045680	4.052320	4.058960	4.065600	4.072240	4.078880	4.085520	4.092160	4.098800	4.105440	4.112080	4.118720	4.125360	4.132000	4.138640	4.145280	4.151920	4.158560	4.165200	4.171840	4.178480	4.185120	4.191760	4.198400	4.205040	4.211680	4.218320	4.224960	4.231600	4.238240	4.244880	4.251520	4.258160	4.264800	4.271440	4.278080	4.284720	4.291360	4.298000	4.304640	4.311280	4.317920	4.324560	4.331200	4.337840	4.344480	4.351120	4.357760	4.364400	4.371040	4.377680	4.384320	4.390960	4.397600	4.404240	4.410880	4.417520	4.424160	4.430800	4.437440	4.444080	4.450720	4.457360	4.464000	4.470640	4.477280	4.483920	4.490560	4.497200	4.503840	4.510480	4.517120	4.523760	4.530400	4.537040	4.543680	4.550320	4.556960	4.563600	4.570240	4.576880	4.583520	4.590160	4.596800	4.603440	4.610080	4.616720	4.623360	4.630000	4.636640	4.643280	4.649920	4.656560	4.663200	4.669840	4.676480	4.683120	4.689760	4.696400	4.703040	4.709680	4.716320	4.722960	4.729600	4.736240	4.742880	4.749520	4.756160	4.762800	4.769440	4.776080	4.782720	4.789360	4.796000	4.802640	4.809280	4.815920	4.822560	4.829200	4.835840	4.842480	4.849120	4.855760	4.862400	4.869040	4.875680	4.882320	4.888960	4.895600	4.902240	4.908880	4.915520	4.922160	4.928800	4.935440	4.942080	4.948720	4.955360	4.962000	4.968640	4.975280	4.981920	4.988560	4.995200	5.001840	5.008480	5.015120	5.021760	5.028400	5.035040	5.041680	5.048320	5.054960	5.061600	5.068240	5.074880	5.081520	5.088160	5.094800	5.101440	5.108080	5.114720	5.121360	5.128000	5.134640	5.141280	5.147920	5.154560	5.161200	5.167840	5.174480	5.181120	5.187760	5.194400	5.201040	5.207680	5.214320	5.220960	5.227600	5.234240	5.240880	5.247520	5.254160	5.260800	5.267440	5.274080	5.280720	5.287360	5.294000	5.300640	5.307280	5.313920	5.320560	5.327200	5.333840	5.340480	5.347120	5.353760	5.360400	5.367040	5.373680	5.380320	5.386960	5.393600	5.400240	5.406880	5.413520	5.420160	5.426800	5.433440	5.440080	5.446720	5.453360	5.460000	5.466640	5.473280	5.479920	5.486560	5.493200	5.499840	5.506480	5.513120	5.519760	5.526400	5.533040	5.539680	5.546320	5.552960	5.559600	5.566240	5.572880	5.579520	5.586160	5.592800	5.599440	5.606080	5.612720	5.619360	5.626000	5.632640	5.639280	5.645920	5.652560	5.659200	5.665840	5.672480	5.679120	5.685760	5.692400	5.699040	5.705680	5.712320	5.718960	5.725600	5.732240	5.738880	5.745520	5.752160	5.758800	5.765440	5.772080	5.778720	5.785360	5.792000	5.798640	5.805280	5.811920	5.818560	5.825200	5.831840	5.838480	5.845120	5.851760	5.858400	5.865040	5.871680	5.878320	5.884960	5.891600	5.898240	5.904880	5.911520	5.918160	5.924800	5.931440	5.938080	5.944720	5.951360	5.958000	5.964640	5.971280	5.977920	5.984560	5.991200	5.997840	6.004480	6.011120	6.017760	6.024400	6.031040	6.037680	6.044320	6.050960	6.057600	6.064240	6.070880	6.077520	6.084160	6.090800	6.097440	6.104080	6.110720	6.117360	6.124000	6.130640	6.137280	6.143920	6.150560	6.157200	6.163840	6.170480	6.177120	6.183760	6.190400	6.197040	6.203680	6.210320	6.216960	6.223600	6.230240	6.236880	6.243520	6.250160	6.256800	6.263440	6.270080	6.276720	6.283360	6.290000	6.296640	6.303280	6.309920	6.316560	6.323200	6.329840	6.336480	6.343120	6.349760	6.356400	6.363040	6.369680	6.376320	6.382960	6.389600	6.396240	6.402880	6.409520	6.416160	6.422800	6.429440	6.436080	6.442720	6.449360	6.456000	6.462640	6.469280	6.475920	6.482560	6.489200	6.495840	6.502480	6.509120	6.515760	6.522400	6.529040	6.535680	6.542320	6.548960	6.555600	6.562240	6.568880	6.575520	6.582160	6.588800	6.595440	6.602080	6.608720	6.615360	6.622000	6.628640	6.635280	6.641920	6.648560	6.655200	6.661840	6.668480	6.675120	6.681760	6.688400	6.695040	6.701680	6.708320	6.714960	6.721600	6.728240	6.734880	6.741520	6.748160	6.754800	6.761440	6.768080	6.774720	6.781360	6.788000	6.794640
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10-67586

46

Percentage Points of the χ^2 - Distribution
Values of χ^2 in Terms of Q and ν

ν	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
87.5	.87627 02	.884937 02	.902137 02	.920083 02	.939250 02	.960229 02	.983952 02	.101209 03	.104824 03	.107150 03
88.0	.884551 02	.893045 02	.910233 02	.928229 02	.946448 02	.965484 02	.985271 02	.101740 03	.105372 03	.107752 03
88.5	.885674 02	.895092 02	.912329 02	.930374 02	.949647 02	.970739 02	.994569 02	.102287 03	.105921 03	.108307 03
89.0	.886968 02	.896400 02	.913642 02	.931687 02	.951044 02	.972593 02	.999906 02	.102866 03	.106499 03	.108881 03
89.5	.888322 02	.897754 02	.914996 02	.932941 02	.952308 02	.974247 02	.100522 03	.103365 03	.107017 03	.109415 03
90.0	.889745 02	.899177 02	.916419 02	.934364 02	.954731 02	.977051 02	.101054 03	.103904 03	.107556 03	.109969 03
90.5	.891228 02	.900660 02	.917902 02	.935847 02	.956214 02	.978751 02	.101585 03	.104443 03	.108113 03	.110523 03
91.0	.892771 02	.902203 02	.919445 02	.937390 02	.957757 02	.980525 03	.102117 03	.104981 03	.108661 03	.111076 03
91.5	.894374 02	.903806 02	.921048 02	.938993 02	.959360 02	.100225 03	.102648 03	.105520 03	.109208 03	.111630 03
92.0	.896037 02	.905469 02	.922711 02	.940656 02	.961023 02	.100750 03	.103179 03	.106058 03	.109756 03	.112183 03
92.5	.897760 02	.907192 02	.924434 02	.942376 02	.962765 02	.101275 03	.103710 03	.106597 03	.110303 03	.112736 03
93.0	.899543 02	.908975 02	.926177 02	.943918 02	.964504 02	.101800 03	.104241 03	.107135 03	.110650 03	.113289 03
93.5	.901386 02	.910818 02	.927959 02	.945459 02	.966246 02	.102325 03	.104772 03	.107673 03	.111397 03	.113842 03
94.0	.903289 02	.912721 02	.929862 02	.947360 02	.967988 02	.102850 03	.105303 03	.108211 03	.111944 03	.114395 03
94.5	.905252 02	.914684 02	.931825 02	.949259 02	.969730 02	.103374 03	.105834 03	.108749 03	.112491 03	.114947 03
95.0	.907275 02	.916707 02	.933848 02	.951200 02	.971442 02	.103899 03	.106364 03	.109286 03	.113038 03	.115500 03
95.5	.909358 02	.918790 02	.935929 02	.953223 02	.973465 02	.104423 03	.106895 03	.109824 03	.113584 03	.116052 03
96.0	.911491 02	.920923 02	.937994 02	.955246 02	.975488 02	.104948 03	.107425 03	.110362 03	.114131 03	.116604 03
96.5	.913674 02	.923106 02	.940177 02	.957269 02	.977511 02	.105472 03	.107956 03	.110899 03	.114677 03	.117156 03
97.0	.915907 02	.925339 02	.942400 02	.959390 02	.979534 02	.105997 03	.108486 03	.111437 03	.115223 03	.117708 03
97.5	.918190 02	.927622 02	.944661 02	.961511 02	.981557 02	.106521 03	.109016 03	.111974 03	.115769 03	.118260 03
98.0	.920523 02	.929955 02	.946912 02	.963632 02	.983600 02	.107045 03	.109547 03	.112511 03	.116315 03	.118811 03
98.5	.922906 02	.932338 02	.949285 02	.965753 02	.985661 02	.107569 03	.110077 03	.113048 03	.116861 03	.119363 03
99.0	.925339 02	.934771 02	.951718 02	.967886 02	.987722 02	.108093 03	.110607 03	.113585 03	.117407 03	.119914 03
99.5	.927822 02	.937254 02	.954201 02	.970369 02	.989657 02	.108617 03	.111137 03	.114122 03	.117953 03	.120466 03
100.0	.930355 02	.939787 02	.956734 02	.972802 02	.990600 02	.109141 03	.111667 03	.114659 03	.118498 03	.121017 03
100.5	.932938 02	.942370 02	.959317 02	.975325 02	.993122 02	.109665 03	.112197 03	.115196 03	.119043 03	.121568 03
101.0	.935581 02	.945013 02	.961960 02	.977848 02	.995645 02	.110189 03	.112726 03	.115732 03	.119589 03	.122118 03
101.5	.938284 02	.947716 02	.964663 02	.980361 02	.998168 02	.110713 03	.113256 03	.116269 03	.120134 03	.122669 03
102.0	.941047 02	.950479 02	.967376 02	.982859 02	.100391 03	.111236 03	.113786 03	.116805 03	.120679 03	.123220 03
102.5	.943870 02	.953302 02	.970200 02	.985347 02	.100915 03	.111760 03	.114315 03	.117341 03	.121224 03	.123770 03
103.0	.946753 02	.956185 02	.973097 02	.987835 02	.101439 03	.112284 03	.114845 03	.117870 03	.121769 03	.124321 03
103.5	.949696 02	.959128 02	.975990 02	.990323 02	.101963 03	.112807 03	.115374 03	.118414 03	.122313 03	.124871 03
104.0	.952699 02	.962131 02	.978882 02	.992806 02	.102487 03	.113331 03	.115903 03	.118950 03	.122858 03	.125421 03
104.5	.955762 02	.965194 02	.981845 02	.995289 02	.103011 03	.113854 03	.116432 03	.119486 03	.123402 03	.125971 03
105.0	.958885 02	.968317 02	.984968 02	.997772 02	.103535 03	.114378 03	.116962 03	.120022 03	.123947 03	.126521 03
105.5	.962068 02	.971500 02	.988091 02	.100020 03	.104059 03	.114901 03	.117491 03	.120558 03	.124491 03	.127070 03
106.0	.965311 02	.974743 02	.991324 02	.100269 03	.104583 03	.115424 03	.118020 03	.121094 03	.125035 03	.127620 03
106.5	.968614 02	.978046 02	.994447 02	.100518 03	.105107 03	.115947 03	.118549 03	.121629 03	.125579 03	.128170 03
107.0	.971977 02	.981409 02	.997500 02	.100767 03	.105631 03	.116471 03	.119078 03	.122165 03	.126123 03	.128719 03
107.5	.975400 02	.984832 02	.100000 03	.101016 03	.106155 03	.116994 03	.119606 03	.122700 03	.126667 03	.129268 03
108.0	.978885 02	.988317 02	.100265 03	.101275 03	.106679 03	.117517 03	.120135 03	.123236 03	.127211 03	.129817 03
108.5	.982430 02	.991862 02	.100530 03	.101534 03	.107200 03	.118040 03	.120664 03	.123771 03	.127755 03	.130366 03
109.0	.986043 02	.995475 02	.100795 03	.101798 03	.107783 03	.118563 03	.121192 03	.124306 03	.128298 03	.130915 03
109.5	.989716 02	.999148 02	.101060 03	.102062 03	.108366 03	.119086 03	.121721 03	.124841 03	.128842 03	.131464 03
110.0	.993449 02	.100387 02	.101325 03	.102325 03	.108949 03	.119608 03	.122250 03	.125376 03	.129385 03	.132013 03
110.5	.997242 02	.100180 02	.101590 03	.102590 03	.109532 03	.120131 03	.122778 03	.125911 03	.129928 03	.132562 03
111.0	.101095 03	.100033 02	.101800 03	.102800 03	.110115 03	.120654 03	.123306 03	.126446 03	.130472 03	.133110 03
111.5	.101518 03	.100456 02	.102060 03	.103060 03	.110638 03	.121177 03	.123835 03	.126981 03	.131015 03	.133658 03
112.0	.102000 03	.100939 02	.102320 03	.103320 03	.111161 03	.121699 03	.124363 03	.127516 03	.131558 03	.134207 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.47500	.45000	.40000	.35000	.25000	.20000	.15000	.10000	.075000
112.5	.112774 03	.112723 03	.112664 03	.112603 03	.122222 03	.124891 03	.128051 03	.132101 03	.134755 03
113.0	.112776 03	.112725 03	.112666 03	.112605 03	.122224 03	.124893 03	.128053 03	.132103 03	.134757 03
113.5	.112778 03	.112727 03	.112668 03	.112607 03	.122226 03	.124895 03	.128055 03	.132105 03	.134759 03
114.0	.112780 03	.112729 03	.112670 03	.112609 03	.122228 03	.124897 03	.128057 03	.132107 03	.134761 03
114.5	.112782 03	.112731 03	.112672 03	.112611 03	.122230 03	.124899 03	.128059 03	.132109 03	.134763 03
115.0	.112784 03	.112733 03	.112674 03	.112613 03	.122232 03	.124901 03	.128061 03	.132111 03	.134765 03
115.5	.112786 03	.112735 03	.112676 03	.112615 03	.122234 03	.124903 03	.128063 03	.132113 03	.134767 03
116.0	.112788 03	.112737 03	.112678 03	.112617 03	.122236 03	.124905 03	.128065 03	.132115 03	.134769 03
116.5	.112790 03	.112739 03	.112680 03	.112619 03	.122238 03	.124907 03	.128067 03	.132117 03	.134771 03
117.0	.112792 03	.112741 03	.112682 03	.112621 03	.122240 03	.124909 03	.128069 03	.132119 03	.134773 03
117.5	.112794 03	.112743 03	.112684 03	.112623 03	.122242 03	.124911 03	.128071 03	.132121 03	.134775 03
118.0	.112796 03	.112745 03	.112686 03	.112625 03	.122244 03	.124913 03	.128073 03	.132123 03	.134777 03
118.5	.112798 03	.112747 03	.112688 03	.112627 03	.122246 03	.124915 03	.128075 03	.132125 03	.134779 03
119.0	.112800 03	.112749 03	.112690 03	.112629 03	.122248 03	.124917 03	.128077 03	.132127 03	.134781 03
119.5	.112802 03	.112751 03	.112692 03	.112631 03	.122250 03	.124919 03	.128079 03	.132129 03	.134783 03
120.0	.112804 03	.112753 03	.112694 03	.112633 03	.122252 03	.124921 03	.128081 03	.132131 03	.134785 03
120.5	.112806 03	.112755 03	.112696 03	.112635 03	.122254 03	.124923 03	.128083 03	.132133 03	.134787 03
121.0	.112808 03	.112757 03	.112698 03	.112637 03	.122256 03	.124925 03	.128085 03	.132135 03	.134789 03
121.5	.112810 03	.112759 03	.112700 03	.112639 03	.122258 03	.124927 03	.128087 03	.132137 03	.134791 03
122.0	.112812 03	.112761 03	.112702 03	.112641 03	.122260 03	.124929 03	.128089 03	.132139 03	.134793 03
122.5	.112814 03	.112763 03	.112704 03	.112643 03	.122262 03	.124931 03	.128091 03	.132141 03	.134795 03
123.0	.112816 03	.112765 03	.112706 03	.112645 03	.122264 03	.124933 03	.128093 03	.132143 03	.134797 03
123.5	.112818 03	.112767 03	.112708 03	.112647 03	.122266 03	.124935 03	.128095 03	.132145 03	.134799 03
124.0	.112820 03	.112769 03	.112710 03	.112649 03	.122268 03	.124937 03	.128097 03	.132147 03	.134801 03
124.5	.112822 03	.112771 03	.112712 03	.112651 03	.122270 03	.124939 03	.128099 03	.132149 03	.134803 03
125.0	.112824 03	.112773 03	.112714 03	.112653 03	.122272 03	.124941 03	.128101 03	.132151 03	.134805 03
125.5	.112826 03	.112775 03	.112716 03	.112655 03	.122274 03	.124943 03	.128103 03	.132153 03	.134807 03
126.0	.112828 03	.112777 03	.112718 03	.112657 03	.122276 03	.124945 03	.128105 03	.132155 03	.134809 03
126.5	.112830 03	.112779 03	.112720 03	.112659 03	.122278 03	.124947 03	.128107 03	.132157 03	.134811 03
127.0	.112832 03	.112781 03	.112722 03	.112661 03	.122280 03	.124949 03	.128109 03	.132159 03	.134813 03
127.5	.112834 03	.112783 03	.112724 03	.112663 03	.122282 03	.124951 03	.128111 03	.132161 03	.134815 03
128.0	.112836 03	.112785 03	.112726 03	.112665 03	.122284 03	.124953 03	.128113 03	.132163 03	.134817 03
128.5	.112838 03	.112787 03	.112728 03	.112667 03	.122286 03	.124955 03	.128115 03	.132165 03	.134819 03
129.0	.112840 03	.112789 03	.112730 03	.112669 03	.122288 03	.124957 03	.128117 03	.132167 03	.134821 03
129.5	.112842 03	.112791 03	.112732 03	.112671 03	.122290 03	.124959 03	.128119 03	.132169 03	.134823 03
130.0	.112844 03	.112793 03	.112734 03	.112673 03	.122292 03	.124961 03	.128121 03	.132171 03	.134825 03
130.5	.112846 03	.112795 03	.112736 03	.112675 03	.122294 03	.124963 03	.128123 03	.132173 03	.134827 03
131.0	.112848 03	.112797 03	.112738 03	.112677 03	.122296 03	.124965 03	.128125 03	.132175 03	.134829 03
131.5	.112850 03	.112799 03	.112740 03	.112679 03	.122298 03	.124967 03	.128127 03	.132177 03	.134831 03
132.0	.112852 03	.112801 03	.112742 03	.112681 03	.122300 03	.124969 03	.128129 03	.132179 03	.134833 03
132.5	.112854 03	.112803 03	.112744 03	.112683 03	.122302 03	.124971 03	.128131 03	.132181 03	.134835 03
133.0	.112856 03	.112805 03	.112746 03	.112685 03	.122304 03	.124973 03	.128133 03	.132183 03	.134837 03
133.5	.112858 03	.112807 03	.112748 03	.112687 03	.122306 03	.124975 03	.128135 03	.132185 03	.134839 03
134.0	.112860 03	.112809 03	.112750 03	.112689 03	.122308 03	.124977 03	.128137 03	.132187 03	.134841 03
134.5	.112862 03	.112811 03	.112752 03	.112691 03	.122310 03	.124979 03	.128139 03	.132189 03	.134843 03
135.0	.112864 03	.112813 03	.112754 03	.112693 03	.122312 03	.124981 03	.128141 03	.132191 03	.134845 03
135.5	.112866 03	.112815 03	.112756 03	.112695 03	.122314 03	.124983 03	.128143 03	.132193 03	.134847 03
136.0	.112868 03	.112817 03	.112758 03	.112697 03	.122316 03	.124985 03	.128145 03	.132195 03	.134849 03
136.5	.112870 03	.112819 03	.112760 03	.112699 03	.122318 03	.124987 03	.128147 03	.132197 03	.134851 03
137.0	.112872 03	.112821 03	.112762 03	.112701 03	.122320 03	.124989 03	.128149 03	.132199 03	.134853 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

$v \backslash Q$	.475000	.493300	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
137.5	.137873 03	.139322 03	.141066 03	.143365 03	.145690 03	.148293 03	.151227 03	.154696 03	.159134 03	.162039 03
138.0	.138375 03	.139826 03	.141574 03	.143873 03	.146206 03	.148813 03	.151753 03	.155227 03	.159673 03	.162582 03
138.5	.138877 03	.140330 03	.142081 03	.144380 03	.146721 03	.149333 03	.152278 03	.155758 03	.160212 03	.163126 03
139.0	.139379 03	.140834 03	.142589 03	.144889 03	.147237 03	.149854 03	.152803 03	.156289 03	.160750 03	.163669 03
139.5	.139881 03	.141338 03	.143097 03	.145397 03	.147753 03	.150374 03	.153328 03	.156821 03	.161289 03	.164212 03
140.0	.140383 03	.141841 03	.143604 03	.145904 03	.148269 03	.150894 03	.153854 03	.157352 03	.161827 03	.164755 03
140.5	.140885 03	.142345 03	.144112 03	.146414 03	.148784 03	.151414 03	.154379 03	.157883 03	.162365 03	.165298 03
141.0	.141387 03	.142849 03	.144619 03	.146926 03	.149300 03	.151934 03	.154904 03	.158414 03	.162904 03	.165841 03
141.5	.141889 03	.143353 03	.145127 03	.147436 03	.149816 03	.152455 03	.155429 03	.158945 03	.163442 03	.166384 03
142.0	.142393 03	.143859 03	.145635 03	.147943 03	.150331 03	.152975 03	.155954 03	.159475 03	.163980 03	.166927 03
142.5	.142897 03	.144365 03	.146142 03	.148450 03	.150847 03	.153495 03	.156479 03	.160006 03	.164510 03	.167470 03
143.0	.143401 03	.144870 03	.146650 03	.148958 03	.151362 03	.154015 03	.157004 03	.160537 03	.165056 03	.168013 03
143.5	.143905 03	.145376 03	.147157 03	.149463 03	.151870 03	.154535 03	.157529 03	.161068 03	.165594 03	.168555 03
144.0	.144409 03	.145882 03	.147665 03	.149973 03	.152383 03	.155055 03	.158054 03	.161598 03	.166132 03	.169098 03
144.5	.144913 03	.146388 03	.148172 03	.150480 03	.152899 03	.155574 03	.158579 03	.162129 03	.166670 03	.169640 03
145.0	.145417 03	.146894 03	.148680 03	.150997 03	.153424 03	.156094 03	.159104 03	.162659 03	.167207 03	.170183 03
145.5	.145921 03	.147400 03	.149187 03	.151503 03	.153940 03	.156614 03	.159628 03	.163190 03	.167745 03	.170725 03
146.0	.146425 03	.147906 03	.149694 03	.152010 03	.154455 03	.157134 03	.160153 03	.163720 03	.168283 03	.171267 03
146.5	.146929 03	.148412 03	.150202 03	.152511 03	.154971 03	.157654 03	.160678 03	.164251 03	.168820 03	.171809 03
147.0	.147433 03	.148918 03	.150709 03	.153023 03	.155486 03	.158174 03	.161202 03	.164781 03	.169358 03	.172351 03
147.5	.147937 03	.149424 03	.151217 03	.153534 03	.156001 03	.158693 03	.161727 03	.165311 03	.169895 03	.172893 03
148.0	.148441 03	.149930 03	.151724 03	.154045 03	.156516 03	.159213 03	.162251 03	.165841 03	.170432 03	.173435 03
148.5	.148945 03	.150436 03	.152239 03	.154566 03	.157032 03	.159732 03	.162776 03	.166372 03	.170970 03	.173977 03
149.0	.149449 03	.150942 03	.152746 03	.155077 03	.157547 03	.160252 03	.163300 03	.166902 03	.171507 03	.174519 03
149.5	.149953 03	.151448 03	.153253 03	.155589 03	.158062 03	.160772 03	.163825 03	.167432 03	.172044 03	.175061 03
150.0	.150457 03	.151954 03	.153760 03	.156100 03	.158577 03	.161291 03	.164349 03	.167962 03	.172581 03	.175602 03
150.5	.150961 03	.152460 03	.154267 03	.156609 03	.159093 03	.161811 03	.164874 03	.168492 03	.173118 03	.176144 03
151.0	.151465 03	.152966 03	.154774 03	.157120 03	.159608 03	.162333 03	.165398 03	.169022 03	.173655 03	.176686 03
151.5	.151969 03	.153472 03	.155281 03	.157623 03	.160112 03	.162850 03	.165922 03	.169551 03	.174192 03	.177227 03
152.0	.152473 03	.153978 03	.155788 03	.158134 03	.160630 03	.163369 03	.166446 03	.170081 03	.174729 03	.177768 03
152.5	.152977 03	.154484 03	.156296 03	.158645 03	.161153 03	.163888 03	.166970 03	.170611 03	.175266 03	.178310 03
153.0	.153481 03	.154990 03	.156804 03	.159156 03	.161668 03	.164408 03	.167495 03	.171141 03	.175803 03	.178851 03
153.5	.153985 03	.155496 03	.157312 03	.159667 03	.162183 03	.164927 03	.168019 03	.171670 03	.176339 03	.179392 03
154.0	.154489 03	.156002 03	.157819 03	.160174 03	.162698 03	.165446 03	.168543 03	.172200 03	.176876 03	.179933 03
154.5	.154993 03	.156508 03	.158326 03	.160683 03	.163213 03	.165966 03	.169067 03	.172730 03	.177412 03	.180474 03
155.0	.155497 03	.157014 03	.158833 03	.161190 03	.163728 03	.166485 03	.169591 03	.173259 03	.177949 03	.181015 03
155.5	.155999 03	.157518 03	.159338 03	.161696 03	.164243 03	.167004 03	.170115 03	.173789 03	.178485 03	.181556 03
156.0	.156503 03	.158024 03	.159845 03	.162204 03	.164758 03	.167523 03	.170633 03	.174318 03	.179022 03	.182097 03
156.5	.156999 03	.158522 03	.160344 03	.162704 03	.165268 03	.168042 03	.171162 03	.174847 03	.179558 03	.182638 03
157.0	.157499 03	.159024 03	.160847 03	.163208 03	.165773 03	.168561 03	.171686 03	.175377 03	.180094 03	.183179 03
157.5	.157999 03	.159526 03	.161350 03	.163712 03	.166287 03	.169086 03	.172210 03	.175906 03	.180630 03	.183719 03
158.0	.158499 03	.160028 03	.161853 03	.164216 03	.166793 03	.169602 03	.172734 03	.176435 03	.181167 03	.184260 03
158.5	.158999 03	.160530 03	.162356 03	.164719 03	.167308 03	.170128 03	.173257 03	.176964 03	.181713 03	.184800 03
159.0	.159499 03	.161034 03	.162861 03	.165224 03	.167814 03	.170636 03	.173765 03	.177479 03	.182239 03	.185341 03
159.5	.159999 03	.161536 03	.163364 03	.165728 03	.168319 03	.171143 03	.174272 03	.177985 03	.182755 03	.185861 03
160.0	.160499 03	.162038 03	.163867 03	.166232 03	.168824 03	.171649 03	.174778 03	.178485 03	.183261 03	.186372 03
160.5	.160999 03	.162540 03	.164370 03	.166736 03	.169328 03	.172154 03	.175283 03	.178985 03	.183761 03	.186872 03
161.0	.161499 03	.163042 03	.164873 03	.167240 03	.169833 03	.172660 03	.175789 03	.179485 03	.184261 03	.187372 03
161.5	.161999 03	.163544 03	.165376 03	.167744 03	.170337 03	.173165 03	.176294 03	.180000 03	.184776 03	.187887 03
162.0	.162499 03	.164052 03	.165885 03	.168254 03	.170847 03	.173676 03	.176805 03	.180500 03	.185276 03	.188387 03

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

	•75000	•100000	•150000	•200000	•250000	•300000	•350000	•400000	•450000	•500000	•550000	•600000	•650000	•700000	•750000	•800000	•850000	•900000	•950000	•1000000
1	189222 33	185989 03	181196 03	177446 03	174269 03	171449 03	168936 03	166432 03	163942 03	161474 03	159036 03	156626 03	154242 03	151883 03	149548 03	147236 03	144946 03	142677 03	140428 03	138199 03
2	189662 03	186525 03	181725 03	177969 03	174788 03	171964 03	169451 03	166947 03	164442 03	161936 03	159429 03	156921 03	154412 03	151902 03	149391 03	146879 03	144366 03	141852 03	139337 03	136822 03
3	190302 03	187050 03	182254 03	178492 03	175307 03	172478 03	169965 03	167461 03	164956 03	162450 03	159943 03	157435 03	154926 03	152416 03	149905 03	147393 03	144880 03	142366 03	139851 03	137336 03
4	190742 03	187536 03	182731 03	179016 03	175825 03	172993 03	170440 03	167926 03	165412 03	162897 03	160382 03	157866 03	155350 03	152833 03	150316 03	147798 03	145279 03	142760 03	140240 03	137720 03
5	191232 03	188031 03	183226 03	179531 03	176340 03	173517 03	170933 03	168419 03	165904 03	163389 03	160873 03	158356 03	155838 03	153320 03	150801 03	148281 03	145760 03	143239 03	140717 03	138194 03
6	191822 03	188627 03	183820 03	180062 03	176877 03	174044 03	171531 03	169017 03	166502 03	163987 03	161471 03	158954 03	156436 03	153917 03	151397 03	148876 03	146354 03	143831 03	141308 03	138784 03
7	192361 03	189173 03	184368 03	180606 03	177421 03	174588 03	172075 03	169561 03	167046 03	164530 03	162013 03	159495 03	156976 03	154456 03	151935 03	149413 03	146890 03	144366 03	141842 03	139317 03
8	192901 03	189732 03	184937 03	181189 03	177990 03	175157 03	172644 03	170130 03	167615 03	165100 03	162584 03	160067 03	157550 03	155032 03	152513 03	149993 03	147472 03	144950 03	142427 03	139903 03
9	193443 03	190272 03	185485 03	181732 03	178533 03	175700 03	173187 03	170673 03	168158 03	165642 03	163125 03	160607 03	158088 03	155568 03	153047 03	150525 03	148002 03	145478 03	142953 03	140428 03
10	193980 03	190808 03	186021 03	182265 03	179066 03	176233 03	173720 03	171206 03	168691 03	166175 03	163658 03	161140 03	158621 03	156101 03	153580 03	151058 03	148535 03	146011 03	143486 03	140961 03
11	194519 03	191343 03	186556 03	182800 03	179601 03	176768 03	174255 03	171741 03	169226 03	166710 03	164193 03	161675 03	159156 03	156636 03	154115 03	151593 03	149070 03	146546 03	144021 03	141496 03
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14	196137 03	192958 03	188171 03	184415 03	181216 03	178383 03	175870 03	173356 03	170841 03	168325 03	165808 03	163290 03	160771 03	158251 03	155730 03	153208 03	150685 03	148161 03	145636 03	143111 03
15	196676 03	193497 03	188710 03	184954 03	181755 03	178922 03	176409 03	173895 03	171380 03	168864 03	166347 03	163830 03	161312 03	158793 03	156273 03	153752 03	151230 03	148707 03	146183 03	143658 03
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17	197754 03	194575 03	189788 03	186032 03	182833 03	179999 03	177486 03	174972 03	172457 03	169941 03	167424 03	164907 03	162389 03	159870 03	157350 03	154829 03	152307 03	149784 03	147261 03	144738 03
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19	198832 03	195653 03	190866 03	187109 03	183910 03	181077 03	178564 03	176051 03	173538 03	171025 03	168512 03	166000 03	163487 03	160974 03	158461 03	155948 03	153435 03	150922 03	148409 03	145896 03
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24	201526 03	198347 03	193560 03	189803 03	186604 03	183771 03	181258 03	178745 03	176232 03	173719 03	171206 03	168693 03	166180 03	163667 03	161154 03	158641 03	156128 03	153615 03	151102 03	148589 03
25	202064 03	198886 03	194099 03	190342 03	187143 03	184310 03	181797 03	179284 03	176771 03	174258 03	171745 03	169232 03	166719 03	164206 03	161693 03	159180 03	156667 03	154154 03	151641 03	149128 03
26	202604 03	199426 03	194639 03	190882 03	187683 03	184850 03	182337 03	179824 03	177311 03	174798 03	172285 03	169772 03	167259 03	164746 03	162233 03	159720 03	157207 03	154694 03	152181 03	149668 03
27	203142 03	199966 03	195179 03	191422 03	188223 03	185390 03	182877 03	180364 03	177851 03	175338 03	172825 03	170312 03	167799 03	165286 03	162773 03	160260 03	157747 03	155234 03	152721 03	150208 03
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31	205296 03	202114 03	197327 03	193570 03	190371 03	187538 03	185025 03	182512 03	180000 03	177487 03	174974 03	172461 03	169948 03	167435 03	164922 03	162409 03	159896 03	157383 03	154870 03	152357 03
32	205834 03	202652 03	197860 03	194103 03	190904 03	188071 03	185558 03	183045 03	180532 03	178019 03	175506 03	172993 03	170480 03	167967 03	165454 03	162941 03	160428 03	157915 03	155402 03	152889 03
33	206372 03	203190 03	198403 03	194646 03	191447 03	188614 03	186101 03	183588 03	181075 03	178562 03	176049 03	173536 03	171023 03	168510 03	166000 03	163487 03	160974 03	158461 03	155948 03	153435 03
34	206910 03	203728 03	198941 03	195184 03	191985 03	189152 03	186639 03	184126 03	181613 03	179100 03	176587 03	174074 03	171561 03	169048 03	166535 03	164022 03	161509 03	158996 03	156483 03	153970 03
35	207448 03	204266 03	199479 03	195722 03	192523 03	189690 03	187177 03	184664 03	182151 03	179638 03	177125 03	174612 03	172099 03	169586 03	167073 03	164560 03	162047 03	159534 03	157021 03	154508 03
36	207986 03	204804 03	199817 03	196060 03	192861 03	190028 03	187515 03	184999 03	182486 03	180000 03	177513 03	175026 03	172539 03	170052 03	167565 03	165078 03	162591 03	160104 03	157617 03	155130 03
37	208524 03	205342 03	200355 03	196598 03	193399 03	190566 03	188053 03	185540 03	183027 03	180514 03	178001 03	175488 03	172975 03	170462 03	167949 03	165436 03	162923 03	160410 03	157897 03	155384 03
38	209062 03	205880 03	200893 03	197136 03	193937 03	191104 03	188591 03	186078 03	183565 03	181052 03	178539 03	176026 03	173513 03	171000 03	168487 03	165974 03	163461 03	160948 03	158435 03	155922 03
39	209600 03	206418 03	201431 03	197674 03	194475 03	191642 03	189129 03	186616 03	184103 03	181590 03	179077 03	176564 03	174051 03	171538 03	169025 03	166512 03	164000 03	161487 03	158974 03	156461 03
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42	211213 03	208031 03	203044 03	199287 03	196088 03	193255 03	190742 03	188229 03	185716 03	183203 03	180690 03	178177 03	175664 03	173151 03	17063					

of the χ^2 Distribution

1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
237.5	.233201 03	.233578 03	.242389 03	.245317 03	.248428 03	.251815 03	.255621 03	.260107 03	.265824 03	.269552 03
238.0	.236702 02	.237081 03	.245895 03	.248826 03	.251940 03	.255230 03	.259641 03	.264631 03	.269553 03	.270085 03
238.5	.239204 03	.239584 03	.248401 03	.251335 03	.254452 03	.257845 03	.262660 03	.267648 03	.272618 03	.270618 03
239.0	.239705 03	.240087 03	.248906 03	.251844 03	.254964 03	.258361 03	.263179 03	.268168 03	.273142 03	.271151 03
239.5	.240206 03	.240590 03	.249412 03	.252352 03	.255476 03	.258876 03	.263699 03	.268690 03	.273671 03	.271684 03
240.0	.240708 03	.241093 03	.249918 03	.252858 03	.255988 03	.259392 03	.264218 03	.269206 03	.274181 03	.272197 03
240.5	.241210 03	.241596 03	.250424 03	.253364 03	.256494 03	.259907 03	.264733 03	.269720 03	.274694 03	.272710 03
241.0	.241711 03	.242100 03	.250928 03	.253868 03	.257002 03	.260415 03	.265241 03	.270228 03	.275201 03	.273217 03
241.5	.242212 03	.242601 03	.251430 03	.254370 03	.257508 03	.260921 03	.265747 03	.270734 03	.275706 03	.273722 03
242.0	.242714 03	.243104 03	.251932 03	.254872 03	.258014 03	.261427 03	.266253 03	.271240 03	.276211 03	.274227 03
242.5	.243215 03	.243607 03	.252435 03	.255375 03	.258520 03	.261933 03	.266759 03	.271746 03	.276716 03	.274732 03
243.0	.243716 03	.244109 03	.252944 03	.255884 03	.259032 03	.262445 03	.267271 03	.272258 03	.277228 03	.275244 03
243.5	.244217 03	.244611 03	.253445 03	.256385 03	.259536 03	.262949 03	.267775 03	.272762 03	.277732 03	.275748 03
244.0	.244718 03	.245113 03	.254052 03	.256992 03	.260146 03	.263559 03	.268385 03	.273372 03	.278342 03	.276358 03
244.5	.245219 03	.245615 03	.254554 03	.257494 03	.260650 03	.264063 03	.268889 03	.273876 03	.278846 03	.276862 03
245.0	.245720 03	.246117 03	.255056 03	.257996 03	.261164 03	.264577 03	.269403 03	.274390 03	.279360 03	.277376 03
245.5	.246221 03	.246619 03	.255555 03	.258495 03	.261676 03	.265089 03	.270015 03	.275002 03	.279972 03	.277988 03
246.0	.246722 03	.247121 03	.256056 03	.258996 03	.262181 03	.265594 03	.270520 03	.275490 03	.280460 03	.278476 03
246.5	.247223 03	.247623 03	.256557 03	.259497 03	.262696 03	.266109 03	.271035 03	.276005 03	.280975 03	.278991 03
247.0	.247724 03	.248125 03	.257058 03	.259998 03	.263201 03	.266614 03	.271540 03	.276510 03	.281480 03	.279496 03
247.5	.248225 03	.248627 03	.257560 03	.260499 03	.263706 03	.267119 03	.272045 03	.277015 03	.281985 03	.279991 03
248.0	.248726 03	.249129 03	.258062 03	.260999 03	.264220 03	.267633 03	.272559 03	.277529 03	.282499 03	.280505 03
248.5	.249227 03	.249631 03	.258564 03	.261499 03	.264724 03	.268137 03	.273063 03	.278033 03	.282949 03	.280955 03
249.0	.249728 03	.250133 03	.259066 03	.261999 03	.265230 03	.268643 03	.273569 03	.278539 03	.283449 03	.281455 03
249.5	.250229 03	.250635 03	.259568 03	.262499 03	.265734 03	.269147 03	.274073 03	.279043 03	.283949 03	.281955 03
250.0	.250730 03	.251137 03	.260070 03	.262999 03	.266236 03	.269649 03	.274575 03	.279545 03	.284449 03	.282455 03
250.5	.251231 03	.251639 03	.260571 03	.263499 03	.266738 03	.270151 03	.275077 03	.280047 03	.284949 03	.282955 03
251.0	.251732 03	.252141 03	.261072 03	.263999 03	.267238 03	.270651 03	.275577 03	.280547 03	.285449 03	.283455 03
251.5	.252233 03	.252643 03	.261573 03	.264499 03	.267738 03	.271151 03	.276077 03	.281047 03	.285949 03	.283955 03
252.0	.252734 03	.253145 03	.262074 03	.264999 03	.268238 03	.271651 03	.276577 03	.281547 03	.286449 03	.284455 03
252.5	.253235 03	.253647 03	.262575 03	.265499 03	.268738 03	.272151 03	.277077 03	.282047 03	.286949 03	.284955 03
253.0	.253736 03	.254149 03	.263076 03	.265999 03	.269238 03	.272651 03	.277577 03	.282547 03	.287449 03	.285455 03
253.5	.254237 03	.254651 03	.263577 03	.266499 03	.269738 03	.273151 03	.278077 03	.283047 03	.287949 03	.285955 03
254.0	.254738 03	.255153 03	.264078 03	.266999 03	.270238 03	.273651 03	.278577 03	.283547 03	.288449 03	.286455 03
254.5	.255239 03	.255655 03	.264579 03	.267499 03	.270738 03	.274151 03	.279077 03	.284047 03	.288949 03	.286955 03
255.0	.255740 03	.256157 03	.265079 03	.267999 03	.271238 03	.274651 03	.279577 03	.284547 03	.289449 03	.287455 03
255.5	.256241 03	.256659 03	.265580 03	.268499 03	.271738 03	.275151 03	.280077 03	.285047 03	.289949 03	.287955 03
256.0	.256742 03	.257161 03	.266081 03	.268999 03	.272238 03	.275651 03	.280577 03	.285547 03	.290449 03	.288455 03
256.5	.257243 03	.257663 03	.266582 03	.269499 03	.272838 03	.276251 03	.281177 03	.286147 03	.291049 03	.289055 03
257.0	.257744 03	.258165 03	.267083 03	.269999 03	.273338 03	.276751 03	.281677 03	.286647 03	.291549 03	.289555 03
257.5	.258245 03	.258667 03	.267584 03	.270499 03	.273838 03	.277251 03	.282177 03	.287147 03	.292049 03	.290055 03
258.0	.258746 03	.259169 03	.268085 03	.270999 03	.274338 03	.277751 03	.282677 03	.287647 03	.292549 03	.290555 03
258.5	.259247 03	.259671 03	.268586 03	.271499 03	.274838 03	.278251 03	.283177 03	.288147 03	.293049 03	.291055 03
259.0	.259748 03	.260173 03	.269087 03	.271999 03	.275338 03	.278751 03	.283677 03	.288647 03	.293549 03	.291555 03
259.5	.260249 03	.260675 03	.269588 03	.272499 03	.275838 03	.279251 03	.284177 03	.289147 03	.294049 03	.292055 03
260.0	.260750 03	.261177 03	.270091 03	.272999 03	.276338 03	.279751 03	.284677 03	.289647 03	.294549 03	.292555 03
260.5	.261251 03	.261679 03	.270592 03	.273499 03	.276838 03	.280251 03	.285177 03	.290147 03	.295049 03	.293055 03
261.0	.261752 03	.262181 03	.271093 03	.273999 03	.277338 03	.280751 03	.285677 03	.290647 03	.295549 03	.293555 03
261.5	.262253 03	.262683 03	.271594 03	.274499 03	.277838 03	.281251 03	.286177 03	.291147 03	.296049 03	.294055 03
262.0	.262754 03	.263185 03	.272095 03	.274999 03	.278338 03	.281751 03	.286677 03	.291647 03	.296549 03	.294555 03
262.5	.263255 03	.263687 03	.272596 03	.275499 03	.278838 03	.282251 03	.287177 03	.292147 03	.297049 03	.295055 03
263.0	.263756 03	.264189 03	.273097 03	.275999 03	.279338 03	.282751 03	.287677 03	.292647 03	.297549 03	.295555 03
263.5	.264257 03	.264691 03	.273598 03	.276499 03	.279838 03	.283251 03	.288177 03	.293147 03	.298049 03	.296055 03
264.0	.264758 03	.265193 03	.274099 03	.276999 03	.280338 03	.283751 03	.288677 03	.293647 03	.298549 03	.296555 03
264.5	.265259 03	.265695 03	.274600 03	.277499 03	.280838 03	.284251 03	.289177 03	.294147 03	.299049 03	.297055 03
265.0	.265760 03	.266197 03	.275101 03	.277999 03	.281338 03	.284751 03	.289677 03	.294647 03	.299549 03	.297555 03
265.5	.266261 03	.266699 03	.275602 03	.278499 03	.281838 03	.285251 03	.290177 03	.295147 03	.300049 03	.298055 03
266.0	.266762 03	.267201 03	.276103 03	.278999 03	.282338 03	.285751 03	.290677 03	.295647 03	.300549 03	.298555 03
266.5	.267263 03	.267703 03	.276604 03	.279499 03	.282838 03	.286251 03	.291177 03	.296147 03	.301049 03	.299055 03
267.0	.267764 03	.268205 03	.277105 03	.280000 03	.283338 03	.286751 03	.291677 03	.296647 03	.301549 03	.299555 03
267.5	.268265 03	.268707 03	.277606 03	.280500 03	.283838 03	.287251 03	.292177 03	.297147 03	.302049 03	.300055 03
268.0	.268766 03	.269209 03	.278107 03	.281000 03	.284338 03	.287751 03	.292677 03	.297647 03	.302549 03	.300555 03
268.5	.269267 03	.269711 03	.278608 03	.281500 03	.284838 03	.288251 03	.293177 03	.298147 03	.303049 03	.301055 03
269.0	.269768 03	.270213 03	.279109 03	.282000 03	.285338 03	.288751 03	.293677 03	.298647 03	.303549 03	.301555 03
269.5	.270269 03	.270715 03	.279610 03	.282500 03	.285838 03	.289251 03	.294177 03	.299147 03	.304049 03	.302055 03
270.0	.270770 03	.271217 03	.280111 03	.283000 03	.286338 03	.289751 03	.294677 03	.299647 03	.304549 03	.302555 03
270.5	.271271 03	.271719 03	.280612 03	.283500 03	.286838 03	.290251 03	.295177 03	.300147 03	.305049 03	.303055 03
271.0	.271772 03	.272221 03	.281113 03	.284000 03	.287338 03	.290751 03	.295677 03	.300647 03	.305549 03	.303555 03
271.5	.272273 03	.272723 03	.281614 03	.284500 03	.287838 03	.291251 03	.296177 03	.301147 03	.306049 03	.304055 03
272.0	.272774 03	.273225 03	.282115 03	.285000 03	.288338 03	.291751 03	.296677 03	.301647 03	.306549 03	.304555 03
272.5	.273275 03	.273727 03	.282616 03	.285500 03	.288838 03	.292251 03	.297177 03	.302147 03	.307049 03	.305055 03
273.0	.273776 03	.274229 03	.283117 03	.286000 03	.289338 03	.292751 03	.297677 03	.302647 03	.307549 03	.305555 03
273.5	.274277 03	.274731 03	.283618 03	.286500 03	.289838 03	.293251 03	.298177 03	.303147 03	.308049 03	.306055 03
274.0	.274778 03	.275233 03	.284119 03	.287000 03	.290338 03	.293751 03	.298677 03	.303647 03	.308549 03	.306555 03
274.5	.275279 03	.275735 03	.284620 03	.287500 03	.290838 03	.294251 03	.299177 03	.304147 03	.309049 03	.307055 03
275.0	.275780 03	.276237 03	.285121 03	.288000 03	.291338 03	.294751 03	.299677 03	.304647 03	.309549 03	.307555 03
275.5	.276281 03	.276739 03	.285622 03	.288500 03	.291838 03	.295251 03	.300177 03	.305147 03	.310049 03	.308055 03
276.0	.276782 03	.277241 03	.286123 03	.289000 03	.292338 03	.295751 03	.300677 03	.305647 03	.310549 03	.308555 03
276.5	.277283 03	.277743 03	.286624 03	.2						

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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	0.05	0.10	0.25	0.50	1.00	2.00	5.00	10.00	20.00	50.00	100.00	200.00	500.00	1000.00	2000.00	5000.00	10000.00
287.5	288.334	289.134	290.000	290.934	291.934	292.994	294.114	295.284	296.504	297.774	299.084	300.434	301.824	303.244	304.694	306.174	307.684
288.5	289.333	290.133	291.000	291.933	292.933	293.993	295.113	296.283	297.503	298.773	300.083	301.433	302.823	304.243	305.693	307.173	308.683
289.5	290.332	291.132	292.000	292.932	293.932	294.992	296.112	297.282	298.502	299.772	301.082	302.432	303.822	305.242	306.692	308.172	309.682
290.5	291.331	292.131	293.000	293.931	294.931	295.991	297.111	298.281	299.501	300.771	302.081	303.431	304.821	306.241	307.691	309.171	310.681
291.5	292.330	293.130	294.000	294.930	295.930	296.990	298.110	299.280	300.500	301.770	303.080	304.430	305.820	307.240	308.690	310.170	311.680
292.5	293.329	294.129	295.000	295.929	296.929	297.989	299.109	300.279	301.500	302.770	304.080	305.430	306.820	308.240	309.690	311.170	312.680
293.5	294.328	295.128	296.000	296.928	297.928	298.988	300.108	301.278	302.500	303.770	305.080	306.430	307.820	309.240	310.690	312.170	313.680
294.5	295.327	296.127	297.000	297.927	298.927	299.987	301.107	302.277	303.500	304.770	306.080	307.430	308.820	310.240	311.690	313.170	314.680
295.5	296.326	297.126	298.000	298.926	299.926	300.986	302.106	303.276	304.500	305.770	307.080	308.430	309.820	311.240	312.690	314.170	315.680
296.5	297.325	298.125	299.000	299.925	300.925	301.985	303.105	304.275	305.500	306.770	308.080	309.430	310.820	312.240	313.690	315.170	316.680
297.5	298.324	299.124	300.000	300.924	301.924	302.984	304.104	305.274	306.500	307.770	309.080	310.430	311.820	313.240	314.690	316.170	317.680
298.5	299.323	300.123	301.000	301.923	302.923	303.983	305.103	306.273	307.500	308.770	310.080	311.430	312.820	314.240	315.690	317.170	318.680
299.5	300.322	301.122	302.000	302.922	303.922	304.982	306.102	307.272	308.500	309.770	311.080	312.430	313.820	315.240	316.690	318.170	319.680
300.5	301.321	302.121	303.000	303.921	304.921	305.981	307.101	308.271	309.500	310.770	312.080	313.430	314.820	316.240	317.690	319.170	320.680
301.5	302.320	303.120	304.000	304.920	305.920	306.980	308.100	309.270	310.500	311.770	313.080	314.430	315.820	317.240	318.690	320.170	321.680
302.5	303.319	304.119	305.000	305.919	306.919	307.979	309.099	310.269	311.500	312.770	314.080	315.430	316.820	318.240	319.690	321.170	322.680
303.5	304.318	305.118	306.000	306.918	307.918	308.978	310.098	311.268	312.500	313.770	315.080	316.430	317.820	319.240	320.690	322.170	323.680
304.5	305.317	306.117	307.000	307.917	308.917	309.977	311.097	312.267	313.500	314.770	316.080	317.430	318.820	320.240	321.690	323.170	324.680
305.5	306.316	307.116	308.000	308.916	309.916	310.976	312.096	313.266	314.500	315.770	317.080	318.430	319.820	321.240	322.690	324.170	325.680
306.5	307.315	308.115	309.000	309.915	310.915	311.975	313.095	314.265	315.500	316.770	318.080	319.430	320.820	322.240	323.690	325.170	326.680
307.5	308.314	309.114	310.000	310.914	311.914	312.974	314.094	315.264	316.500	317.770	319.080	320.430	321.820	323.240	324.690	326.170	327.680
308.5	309.313	310.113	311.000	311.913	312.913	313.973	315.093	316.263	317.500	318.770	320.080	321.430	322.820	324.240	325.690	327.170	328.680
309.5	310.312	311.112	312.000	312.912	313.912	314.972	316.092	317.262	318.500	319.770	321.080	322.430	323.820	325.240	326.690	328.170	329.680
310.5	311.311	312.111	313.000	313.911	314.911	315.971	317.091	318.261	319.500	320.770	322.080	323.430	324.820	326.240	327.690	329.170	330.680
311.5	312.310	313.110	314.000	314.910	315.910	316.970	318.090	319.260	320.500	321.770	323.080	324.430	325.820	327.240	328.690	330.170	331.680
312.5	313.309	314.109	315.000	315.909	316.909	317.969	319.089	320.259	321.500	322.770	324.080	325.430	326.820	328.240	329.690	331.170	332.680
313.5	314.308	315.108	316.000	316.908	317.908	318.968	320.088	321.258	322.500	323.770	325.080	326.430	327.820	329.240	330.690	332.170	333.680
314.5	315.307	316.107	317.000	317.907	318.907	319.967	321.087	322.257	323.500	324.770	326.080	327.430	328.820	330.240	331.690	333.170	334.680
315.5	316.306	317.106	318.000	318.906	319.906	320.966	322.086	323.256	324.500	325.770	327.080	328.430	329.820	331.240	332.690	334.170	335.680
316.5	317.305	318.105	319.000	319.905	320.905	321.965	323.085	324.255	325.500	326.770	328.080	329.430	330.820	332.240	333.690	335.170	336.680
317.5	318.304	319.104	320.000	320.904	321.904	322.964	324.084	325.254	326.500	327.770	329.080	330.430	331.820	333.240	334.690	336.170	337.680
318.5	319.303	320.103	321.000	321.903	322.903	323.963	325.083	326.253	327.500	328.770	330.080	331.430	332.820	334.240	335.690	337.170	338.680
319.5	320.302	321.102	322.000	322.902	323.902	324.962	326.082	327.252	328.500	329.770	331.080	332.430	333.820	335.240	336.690	338.170	339.680
320.5	321.301	322.101	323.000	323.901	324.901	325.961	327.081	328.251	329.500	330.770	332.080	333.430	334.820	336.240	337.690	339.170	340.680
321.5	322.300	323.100	324.000	324.900	325.900	326.960	328.080	329.250	330.500	331.770	333.080	334.430	335.820	337.240	338.690	340.170	341.680
322.5	323.299	324.099	325.000	325.909	326.909	327.969	329.089	330.259	331.500	332.770	334.080	335.430	336.820	338.240	339.690	341.170	342.680
323.5	324.298	325.098	326.000	326.908	327.908	328.968	330.088	331.258	332.500	333.770	335.080	336.430	337.820	339.240	340.690	342.170	343.680
324.5	325.297	326.097	327.000	327.907	328.907	329.967	331.087	332.257	333.500	334.770	336.080	337.430	338.820	340.240	341.690	343.170	344.680
325.5	326.296	327.096	328.000	328.906	329.906	330.966	332.086	333.256	334.500	335.770	337.080	338.430	339.820	341.240	342.690	344.170	345.680
326.5	327.295	328.095	329.000	329.905	330.905	331.965	333.085	334.255	335.500	336.770	338.080	339.430	340.820	342.240	343.690	345.170	346.680
327.5	328.294	329.094	330.000	330.904	331.904	332.964	334.084	335.254	336.500	337.770	339.080	340.430	341.820	343.240	344.690	346.170	347.680
328.5	329.293	330.093	331.000	331.903	332.903	333.963	335.083	336.253	337.500	338.770	340.080	341.430	342.820	344.240	345.690	347.170	348.680
329.5	330.292	331.092	332.000	332.902	333.902	334.962	336.082	337.252	338.500	339.770	341.080	342.430	343.820	345.240	346.690	348.170	349.680
330.5	331.291	332.091	333.000	333.901	334.901	335.961	337.081	338.251	339.500	340.770	342.080	343.430	344.820	346.240	347.690	349.170	350.680
331.5	332.290	333.090	334.000	334.900	335.900	336.960	338.080	339.250	340.500	341.770	343.080	344.430	345.820	347.240	348.690	350.170	351.680
332.5	333.289	334.089	335.000	335.909	336.909	337.969	339.089	340.259	341.500	342.770	344.080	345.430	346.820	348.240	349.690	351.170	352.680
333.5	334.288	335.088	336.000	336.908	337.908	338.968	340.088	341.258	342.500	343.770	345.080	346.430	347.820	349.240	350.690	352.170	353.680
334.5	335.287	336.087	337.000	337.907	338.907	339.967	341.087	342.257	343.500	344.770	346.080	347.430	348.820	350.240	351.690	353.170	354.680
335.5	336.286	337.086	338.000	338.906	339.906	340.966	342.086	343.256	344.500	345.770	347.080	348.430	349.820	351.240	352.690	354.170	355.680
336.5	337.285	338.085	339.000	339.905	340.905	341.965	343.085	344.255	345.500	346.770	348.080	349.430	350.820	352.240	353.690	355.170	356.680
337.5	338.284	339.084	340.000	340.904	341.904	342.964	344.084	345.254	346.500	347.770	349.080	350.430	351.820	353.240	354.690	356.170	357.680
338.5	339.283	340.083	341.000	341.903	342.903	343.963	345.083	346.253	347.500	348.770	350.080	351.430	352.820	354.240	355.690	357.170	358.680
339.5	340.282	341.082	342.000	342.902	343.902	344.962	346.082	347.252	348.500	349.770	351.080	352.430	353.820	355.240	356.690	358.170	359.680
340.5	341.281	342.081	343.000	343.901	344.901	345.961	347.081	348.251	349.500	350.770	352.080	353.430	354.820	356.240	357.690	359.170	360.680
341.5	342.280	343.080	344.000	344.900	345.900	346.960	348.080	349.250	350.500	351.770	353.080	354.430	355.820	357.240	358.690	360.170	361.680
342.5	343.279	344.079															

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	0.75000	0.50000	0.25000	0.10000	0.05000	0.02500	0.01000	0.00500
32.5	31.242 02	31.952 03	32.155 03	32.511 03	32.897 03	33.332 03	33.843 03	34.917 03
32.6	31.393 03	32.104 03	32.306 03	32.662 03	33.049 03	33.484 03	33.995 03	34.970 03
32.7	31.544 03	32.255 03	32.457 03	32.813 03	33.200 03	33.635 03	34.146 03	35.022 03
32.8	31.695 03	32.406 03	32.608 03	32.964 03	33.351 03	33.786 03	34.297 03	35.073 03
32.9	31.846 03	32.557 03	32.759 03	33.115 03	33.502 03	33.937 03	34.448 03	35.124 03
33.0	31.997 03	32.708 03	32.910 03	33.266 03	33.653 03	34.088 03	34.599 03	35.175 03
33.1	32.148 03	32.859 03	33.061 03	33.417 03	33.804 03	34.239 03	34.750 03	35.226 03
33.2	32.299 03	33.010 03	33.212 03	33.568 03	33.955 03	34.390 03	34.901 03	35.277 03
33.3	32.450 03	33.161 03	33.363 03	33.719 03	34.106 03	34.541 03	35.052 03	35.328 03
33.4	32.601 03	33.312 03	33.514 03	33.870 03	34.257 03	34.692 03	35.203 03	35.379 03
33.5	32.752 03	33.463 03	33.665 03	34.021 03	34.408 03	34.843 03	35.354 03	35.430 03
33.6	32.903 03	33.614 03	33.816 03	34.172 03	34.559 03	34.994 03	35.505 03	35.481 03
33.7	33.054 03	33.765 03	33.967 03	34.323 03	34.710 03	35.145 03	35.656 03	35.532 03
33.8	33.205 03	33.916 03	34.118 03	34.474 03	34.861 03	35.296 03	35.807 03	35.583 03
33.9	33.356 03	34.067 03	34.269 03	34.625 03	35.012 03	35.447 03	35.958 03	35.634 03
34.0	33.507 03	34.218 03	34.420 03	34.776 03	35.163 03	35.598 03	36.109 03	35.685 03
34.1	33.658 03	34.369 03	34.571 03	34.927 03	35.314 03	35.749 03	36.260 03	35.736 03
34.2	33.809 03	34.520 03	34.722 03	35.078 03	35.465 03	35.899 03	36.411 03	35.787 03
34.3	33.960 03	34.671 03	34.873 03	35.229 03	35.616 03	36.050 03	36.562 03	35.838 03
34.4	34.111 03	34.822 03	35.024 03	35.380 03	35.767 03	36.201 03	36.713 03	35.889 03
34.5	34.262 03	34.973 03	35.175 03	35.531 03	35.918 03	36.352 03	36.864 03	35.940 03
34.6	34.413 03	35.124 03	35.326 03	35.682 03	36.069 03	36.503 03	37.015 03	35.991 03
34.7	34.564 03	35.275 03	35.477 03	35.833 03	36.220 03	36.654 03	37.166 03	36.042 03
34.8	34.715 03	35.426 03	35.628 03	35.984 03	36.371 03	36.805 03	37.317 03	36.093 03
34.9	34.866 03	35.577 03	35.779 03	36.135 03	36.522 03	36.956 03	37.468 03	36.144 03
35.0	35.017 03	35.728 03	35.930 03	36.286 03	36.673 03	37.107 03	37.619 03	36.195 03
35.1	35.168 03	35.879 03	36.081 03	36.437 03	36.824 03	37.258 03	37.770 03	36.246 03
35.2	35.319 03	36.030 03	36.232 03	36.588 03	36.975 03	37.409 03	37.921 03	36.297 03
35.3	35.470 03	36.181 03	36.383 03	36.739 03	37.126 03	37.560 03	38.072 03	36.348 03
35.4	35.621 03	36.332 03	36.534 03	36.890 03	37.277 03	37.711 03	38.223 03	36.399 03
35.5	35.772 03	36.483 03	36.685 03	37.041 03	37.428 03	37.862 03	38.374 03	36.450 03
35.6	35.923 03	36.634 03	36.836 03	37.192 03	37.579 03	38.013 03	38.525 03	36.501 03
35.7	36.074 03	36.785 03	36.987 03	37.343 03	37.730 03	38.164 03	38.676 03	36.552 03
35.8	36.225 03	36.936 03	37.138 03	37.494 03	37.881 03	38.315 03	38.827 03	36.603 03
35.9	36.376 03	37.087 03	37.289 03	37.645 03	38.032 03	38.466 03	38.978 03	36.654 03
36.0	36.527 03	37.238 03	37.440 03	37.796 03	38.183 03	38.617 03	39.129 03	36.705 03
36.1	36.678 03	37.389 03	37.591 03	37.947 03	38.334 03	38.768 03	39.280 03	36.756 03
36.2	36.829 03	37.540 03	37.742 03	38.098 03	38.485 03	38.919 03	39.431 03	36.807 03
36.3	36.980 03	37.691 03	37.893 03	38.249 03	38.636 03	39.070 03	39.582 03	36.858 03
36.4	37.131 03	37.842 03	38.044 03	38.400 03	38.787 03	39.221 03	39.733 03	36.909 03
36.5	37.282 03	37.993 03	38.195 03	38.551 03	38.938 03	39.372 03	39.884 03	36.960 03
36.6	37.433 03	38.144 03	38.346 03	38.702 03	39.089 03	39.523 03	40.035 03	37.011 03
36.7	37.584 03	38.295 03	38.497 03	38.853 03	39.240 03	39.674 03	40.186 03	37.062 03
36.8	37.735 03	38.446 03	38.648 03	39.004 03	39.391 03	39.825 03	40.337 03	37.113 03
36.9	37.886 03	38.597 03	38.799 03	39.155 03	39.542 03	39.976 03	40.488 03	37.164 03
37.0	38.037 03	38.748 03	38.950 03	39.306 03	39.693 03	40.127 03	40.639 03	37.215 03
37.1	38.188 03	38.899 03	39.101 03	39.457 03	39.844 03	40.278 03	40.790 03	37.266 03
37.2	38.339 03	39.050 03	39.252 03	39.608 03	39.995 03	40.429 03	40.941 03	37.317 03
37.3	38.490 03	39.201 03	39.403 03	39.759 03	40.146 03	40.580 03	41.092 03	37.368 03
37.4	38.641 03	39.352 03	39.554 03	39.910 03	40.297 03	40.731 03	41.243 03	37.419 03
37.5	38.792 03	39.503 03	39.705 03	40.061 03	40.448 03	40.882 03	41.394 03	37.470 03
37.6	38.943 03	39.654 03	39.856 03	40.212 03	40.599 03	41.033 03	41.545 03	37.521 03
37.7	39.094 03	39.805 03	40.007 03	40.363 03	40.750 03	41.184 03	41.696 03	37.572 03
37.8	39.245 03	39.956 03	40.158 03	40.514 03	40.901 03	41.335 03	41.847 03	37.623 03
37.9	39.396 03	40.107 03	40.309 03	40.665 03	41.052 03	41.486 03	41.998 03	37.674 03
38.0	39.547 03	40.258 03	40.460 03	40.816 03	41.203 03	41.637 03	42.149 03	37.725 03
38.1	39.698 03	40.409 03	40.611 03	40.967 03	41.354 03	41.788 03	42.300 03	37.776 03
38.2	39.849 03	40.560 03	40.762 03	41.118 03	41.505 03	41.939 03	42.451 03	37.827 03
38.3	39.999 03	40.711 03	40.913 03	41.269 03	41.656 03	42.090 03	42.602 03	37.878 03
38.4	40.150 03	40.862 03	41.064 03	41.420 03	41.807 03	42.241 03	42.753 03	37.929 03
38.5	40.301 03	41.013 03	41.215 03	41.571 03	41.958 03	42.392 03	42.904 03	37.980 03
38.6	40.452 03	41.164 03	41.366 03	41.722 03	42.109 03	42.543 03	43.055 03	38.031 03
38.7	40.603 03	41.315 03	41.517 03	41.873 03	42.260 03	42.694 03	43.206 03	38.082 03
38.8	40.754 03	41.466 03	41.668 03	42.024 03	42.411 03	42.845 03	43.357 03	38.133 03
38.9	40.905 03	41.617 03	41.819 03	42.175 03	42.562 03	42.996 03	43.508 03	38.184 03
39.0	41.056 03	41.768 03	41.970 03	42.326 03	42.713 03	43.147 03	43.659 03	38.235 03
39.1	41.207 03	41.919 03	42.121 03	42.477 03	42.864 03	43.298 03	43.810 03	38.286 03
39.2	41.358 03	42.070 03	42.272 03	42.628 03	43.015 03	43.449 03	43.961 03	38.337 03
39.3	41.509 03	42.221 03	42.423 03	42.779 03	43.166 03	43.600 03	44.112 03	38.388 03
39.4	41.660 03	42.372 03	42.574 03	42.930 03	43.317 03	43.751 03	44.263 03	38.439 03
39.5	41.811 03	42.523 03	42.725 03	43.081 03	43.468 03	43.902 03	44.414 03	38.490 03
39.6	41.962 03	42.674 03	42.876 03	43.232 03	43.619 03	44.053 03	44.565 03	38.541 03
39.7	42.113 03	42.825 03	43.027 03	43.383 03	43.770 03	44.204 03	44.716 03	38.592 03
39.8	42.264 03	42.976 03	43.178 03	43.534 03	43.921 03	44.355 03	44.867 03	38.643 03
39.9	42.415 03	43.127 03	43.329 03	43.685 03	44.072 03	44.506 03	45.018 03	38.694 03
40.0	42.566 03	43.278 03	43.480 03	43.836 03	44.223 03	44.657 03	45.169 03	38.745 03
40.1	42.717 03	43.429 03	43.631 03	43.987 03	44.374 03	44.808 03	45.320 03	38.796 03
40.2	42.868 03	43.580 03	43.782 03	44.138 03	44.525 03	44.959 03	45.471 03	38.847 03
40.3	43.019 03	43.731 03	43.933 03	44.289 03	44.676 03	45.110 03	45.622 03	38.898 03
40.4	43.170 03	43.882 03	44.084 03	44.440 03	44.827 03	45.261 03	45.773 03	38.949 03
40.5	43.321 03	44.033 03	44.235 03	44.591 03	44.978 03	45.412 03	45.924 03	38.999 03
40.6	43.472 03	44.184 03	44.386 03	44.742 03	45.129 03	45.563 03	46.075 03	39.050 03
40.7	43.623 03	44.335 03	44.537 03	44.893 03	45.280 03	45.714 03	46.226 03	39.101 03
40.8	43.774 03	44.486 03	44.688 03	45.044 03	45.431 03	45.865 03	46.377 03	39.152 03
40.9	43.925 03	44.637 03	44.839 03	45.195 03	45.582 03	46.016 03	46.528 03	39.203 03
41.0	44.076 03	44.788 03	44.990 03	45.346 03	45.733 03	46.167 03	46.679 03	39.254 03
41.1	44.227 03	44.939 03	45.141 03	45.497 03	45.884 03	46.318 03	46.830 03	39.305 03
41.2	44.378 03	45.090 03	45.292 03	45.648 03	46.035 03	46.469 03	46.981 03	39.356 03
41.3	44.529 03	45.241 03	45.443 03	45.799 03	46.186 03	46.620 03	47.132 03	39.407 03
41.4	44.680 03	45.392 03	45.594 03	45.950 03	46.337 03	46.771 03	47.283 03	39.458 03
41.5	44.831 03	45.543 03	45.745 03	46.101 03	46.488 03	46.922 03	47.434 03	39.509 03
41.6	44.982 03	45.694 03	45.896 03	46.252 03	46.639 03	47.073 03	47.585 03	39.560 03
41.7	45.133 03	45.845 03	46.047 03	46.403 03	46.790 03	47.224 03	47.736 03	39.611 03
41.8	45.284 03	45.996 03	46.198 03	46.554 03	46.941 03	47.375 03	47.887 03	39.662 03
41.9	45.435 03	46.147 03	46.349 03	46.705 03	47.092 03	47.526 03	48.038 03	39.713 03
42.0	45.586 03	46.298 03	46.500 03	46.856 03	47.243 03	47.677 03	48.189 03	39.764 03
42.1	45.737 03	46.449 03	46.651 03	47.007 03</				

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν/Q	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
327.5	.338463 03	.340105 03	.343451 03	.346932 03	.350626 03	.354642 03	.359149 03	.364451 03	.371195 03	.375524 03
328.0	.338965 03	.340607 03	.343956 03	.347440 03	.351136 03	.355155 03	.359665 03	.364971 03	.371719 03	.376040 03
328.5	.339466 03	.341108 03	.344461 03	.347947 03	.351646 03	.355668 03	.360181 03	.365490 03	.372244 03	.376568 03
329.0	.339967 03	.341609 03	.344966 03	.348454 03	.352156 03	.356181 03	.360698 03	.366010 03	.372768 03	.377093 03
329.5	.340468 03	.342110 03	.345470 03	.348962 03	.352666 03	.356694 03	.361214 03	.366530 03	.373293 03	.377619 03
330.0	.340970 03	.342612 03	.345975 03	.349469 03	.353177 03	.357207 03	.361730 03	.367050 03	.373816 03	.378143 03
330.5	.341471 03	.343113 03	.346480 03	.349977 03	.353687 03	.357719 03	.362246 03	.367570 03	.374342 03	.378670 03
331.0	.341972 03	.343614 03	.346985 03	.350484 03	.354197 03	.358232 03	.362762 03	.368090 03	.374867 03	.379196 03
331.5	.342473 03	.344115 03	.347490 03	.350991 03	.354707 03	.358745 03	.363278 03	.368610 03	.375391 03	.379720 03
332.0	.342974 03	.344616 03	.347995 03	.351499 03	.355217 03	.359258 03	.363794 03	.369130 03	.375916 03	.380245 03
332.5	.343476 03	.345118 03	.348500 03	.352006 03	.355727 03	.359771 03	.364311 03	.369650 03	.376440 03	.380770 03
333.0	.343977 03	.345619 03	.349004 03	.352513 03	.356237 03	.360284 03	.364827 03	.370169 03	.376965 03	.381300 03
333.5	.344478 03	.346120 03	.349509 03	.353021 03	.356747 03	.360797 03	.365343 03	.370689 03	.377489 03	.381820 03
334.0	.344979 03	.346621 03	.350014 03	.353528 03	.357257 03	.361310 03	.365859 03	.371209 03	.378014 03	.382345 03
334.5	.345480 03	.347122 03	.350519 03	.354036 03	.357767 03	.361823 03	.366375 03	.371729 03	.378538 03	.382870 03
335.0	.345981 03	.347623 03	.351024 03	.354543 03	.358277 03	.362336 03	.366891 03	.372248 03	.379063 03	.383400 03
335.5	.346482 03	.348124 03	.351529 03	.355050 03	.358787 03	.362846 03	.367407 03	.372768 03	.379587 03	.383920 03
336.0	.346984 03	.348626 03	.352033 03	.355558 03	.359297 03	.363361 03	.367923 03	.373288 03	.380112 03	.384435 03
336.5	.347485 03	.349127 03	.352538 03	.356065 03	.359807 03	.363874 03	.368439 03	.373808 03	.380636 03	.384960 03
337.0	.347986 03	.349628 03	.353043 03	.356572 03	.360317 03	.364387 03	.368955 03	.374327 03	.381160 03	.385485 03
337.5	.348487 03	.350129 03	.353548 03	.357080 03	.360827 03	.364900 03	.369471 03	.374847 03	.381685 03	.386010 03
338.0	.348989 03	.350631 03	.354053 03	.357587 03	.361337 03	.365412 03	.369987 03	.375367 03	.382209 03	.386535 03
338.5	.349490 03	.351132 03	.354558 03	.358094 03	.361847 03	.365925 03	.370503 03	.375886 03	.382733 03	.387060 03
339.0	.349991 03	.351633 03	.355062 03	.358601 03	.362357 03	.366438 03	.371019 03	.376406 03	.383258 03	.387585 03
339.5	.350492 03	.352134 03	.355567 03	.359109 03	.362866 03	.366951 03	.371535 03	.376926 03	.383782 03	.388110 03
340.0	.350993 03	.352635 03	.356072 03	.359616 03	.363376 03	.367464 03	.372051 03	.377445 03	.384306 03	.388635 03
340.5	.351495 03	.353137 03	.356577 03	.360123 03	.363886 03	.367976 03	.372567 03	.377965 03	.384830 03	.389160 03
341.0	.351996 03	.353638 03	.357081 03	.360631 03	.364396 03	.368489 03	.373082 03	.378484 03	.385354 03	.389685 03
341.5	.352497 03	.354139 03	.357586 03	.361138 03	.364906 03	.369002 03	.373598 03	.379004 03	.385879 03	.390210 03
342.0	.352998 03	.354640 03	.358091 03	.361645 03	.365416 03	.369515 03	.374114 03	.379523 03	.386403 03	.390735 03
342.5	.353499 03	.355141 03	.358596 03	.362152 03	.365926 03	.370027 03	.374630 03	.380043 03	.386927 03	.391260 03
343.0	.353999 03	.355641 03	.359101 03	.362660 03	.366436 03	.370540 03	.375146 03	.380563 03	.387451 03	.391785 03
343.5	.354499 03	.356141 03	.359605 03	.363167 03	.366946 03	.371053 03	.375662 03	.381082 03	.387975 03	.392310 03
344.0	.354999 03	.356641 03	.360109 03	.363674 03	.367456 03	.371565 03	.376178 03	.381602 03	.388499 03	.392835 03
344.5	.355499 03	.357141 03	.360615 03	.364181 03	.367965 03	.372078 03	.376693 03	.382121 03	.389023 03	.393360 03
345.0	.355999 03	.357641 03	.361120 03	.364689 03	.368475 03	.372591 03	.377209 03	.382641 03	.389548 03	.393885 03
345.5	.356499 03	.358141 03	.361624 03	.365196 03	.368985 03	.373103 03	.377725 03	.383160 03	.390072 03	.394410 03
346.0	.356999 03	.358641 03	.362129 03	.365703 03	.369495 03	.373616 03	.378241 03	.383679 03	.390596 03	.394935 03
346.5	.357499 03	.359141 03	.362634 03	.366210 03	.370005 03	.374129 03	.378757 03	.384199 03	.391120 03	.395460 03
347.0	.357999 03	.359641 03	.363139 03	.366718 03	.370515 03	.374641 03	.379272 03	.384718 03	.391644 03	.395985 03
347.5	.358499 03	.360141 03	.363643 03	.367225 03	.371024 03	.375154 03	.379788 03	.385238 03	.392168 03	.396510 03
348.0	.358999 03	.360641 03	.364148 03	.367732 03	.371534 03	.375667 03	.380304 03	.385757 03	.392692 03	.397035 03
348.5	.359499 03	.361141 03	.364653 03	.368239 03	.372044 03	.376179 03	.380820 03	.386276 03	.393216 03	.397560 03
349.0	.359999 03	.361641 03	.365158 03	.368746 03	.372554 03	.376692 03	.381335 03	.386796 03	.393740 03	.398085 03
349.5	.360499 03	.362141 03	.365662 03	.369254 03	.373064 03	.377204 03	.381851 03	.387315 03	.394263 03	.398610 03
350.0	.360999 03	.362641 03	.366167 03	.369761 03	.373573 03	.377717 03	.382367 03	.387835 03	.394787 03	.399135 03
350.5	.361499 03	.363141 03	.366672 03	.370268 03	.374083 03	.378230 03	.382883 03	.388354 03	.395311 03	.399660 03
351.0	.361999 03	.363641 03	.367177 03	.370775 03	.374593 03	.378742 03	.383400 03	.388873 03	.395835 03	.400185 03
351.5	.362499 03	.364141 03	.367681 03	.371282 03	.375103 03	.379255 03	.383914 03	.389392 03	.396359 03	.400710 03
352.0	.362999 03	.364641 03	.368186 03	.371790 03	.375612 03	.379767 03	.384430 03	.389912 03	.396883 03	.401240 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.475000	.450000	.400000	.350000	.300000	.250000	.200000	.150000	.100000	.075000
362.5	.363523 01	.365224 03	.366691 03	.372297 03	.376122 03	.382880 03	.384945 03	.390431 03	.397407 03	.401946 03
363.0	.364024 01	.365726 03	.369195 03	.372804 03	.376632 03	.380792 03	.385461 03	.390950 03	.397931 03	.402473 03
363.5	.364525 01	.366229 03	.369700 03	.373311 03	.377142 03	.381305 03	.385976 03	.391470 03	.398454 03	.402999 03
364.0	.365026 01	.366731 03	.370203 03	.373818 03	.377651 03	.381817 03	.386492 03	.391989 03	.398978 03	.403526 03
364.5	.365527 01	.367233 03	.370709 03	.374325 03	.378161 03	.382330 03	.387008 03	.392508 03	.399502 03	.404053 03
365.0	.366028 01	.367736 03	.371214 03	.374832 03	.378671 03	.382842 03	.387523 03	.393027 03	.400026 03	.404580 03
365.5	.366530 01	.368238 03	.371719 03	.375340 03	.379181 03	.383355 03	.388039 03	.393546 03	.400549 03	.405106 03
366.0	.367031 01	.368740 03	.372224 03	.375847 03	.379690 03	.383867 03	.388554 03	.394066 03	.401073 03	.405633 03
366.5	.367532 01	.369243 03	.372728 03	.376354 03	.380200 03	.384380 03	.389070 03	.394585 03	.401597 03	.406159 03
367.0	.368033 01	.369745 03	.373233 03	.376861 03	.380710 03	.384892 03	.389586 03	.395104 03	.402120 03	.406686 03
367.5	.368534 01	.370247 03	.373738 03	.377368 03	.381219 03	.385405 03	.390101 03	.395623 03	.402644 03	.407213 03
368.0	.369035 01	.370750 03	.374242 03	.377875 03	.381729 03	.385917 03	.390617 03	.396142 03	.403168 03	.407739 03
368.5	.369536 01	.371252 03	.374747 03	.378382 03	.382239 03	.386430 03	.391132 03	.396661 03	.403691 03	.408266 03
369.0	.370037 01	.371754 03	.375252 03	.378889 03	.382748 03	.386942 03	.391648 03	.397180 03	.404215 03	.408792 03
369.5	.370538 01	.372257 03	.375756 03	.379396 03	.383256 03	.387454 03	.392163 03	.397699 03	.404739 03	.409319 03
370.0	.371039 01	.372759 03	.376261 03	.379904 03	.383768 03	.387967 03	.392679 03	.398218 03	.405262 03	.409845 03
370.5	.371540 01	.373261 03	.376766 03	.380411 03	.384277 03	.388479 03	.393194 03	.398738 03	.405786 03	.410372 03
371.0	.372042 01	.373763 03	.377270 03	.380915 03	.384787 03	.388992 03	.393710 03	.399257 03	.406309 03	.410898 03
371.5	.372543 01	.374264 03	.377775 03	.381425 03	.385297 03	.389504 03	.394225 03	.399776 03	.406833 03	.411425 03
372.0	.373045 01	.374766 03	.378280 03	.381932 03	.385806 03	.390016 03	.394740 03	.400295 03	.407356 03	.411951 03
372.5	.373546 01	.375267 03	.378784 03	.382439 03	.386316 03	.390529 03	.395256 03	.400814 03	.407880 03	.412477 03
373.0	.374047 01	.375768 03	.379289 03	.382946 03	.386825 03	.391041 03	.395771 03	.401333 03	.408403 03	.412904 03
373.5	.374548 01	.376269 03	.379793 03	.383453 03	.387335 03	.391554 03	.396287 03	.401852 03	.408927 03	.413430 03
374.0	.375049 01	.376770 03	.380300 03	.383960 03	.387845 03	.392066 03	.396802 03	.402371 03	.409450 03	.413956 03
374.5	.375550 01	.377271 03	.380803 03	.384467 03	.388354 03	.392578 03	.397318 03	.402890 03	.409974 03	.414483 03
375.0	.376051 01	.377772 03	.381307 03	.384974 03	.388864 03	.393091 03	.397833 03	.403409 03	.410497 03	.415009 03
375.5	.376552 01	.378273 03	.381812 03	.385481 03	.389373 03	.393603 03	.398348 03	.403927 03	.411020 03	.415535 03
376.0	.377053 01	.378774 03	.382317 03	.385988 03	.389883 03	.394115 03	.398864 03	.404446 03	.411544 03	.416082 03
376.5	.377554 01	.379275 03	.382821 03	.386495 03	.390393 03	.394627 03	.399379 03	.404965 03	.412067 03	.416618 03
377.0	.378055 01	.379776 03	.383326 03	.387002 03	.390902 03	.395140 03	.399894 03	.405484 03	.412591 03	.417124 03
377.5	.378556 01	.380277 03	.383851 03	.387529 03	.391442 03	.395652 03	.400410 03	.406003 03	.413114 03	.417740 03
378.0	.379057 01	.380778 03	.384355 03	.388036 03	.391921 03	.396164 03	.400925 03	.406522 03	.413637 03	.418267 03
378.5	.379558 01	.381279 03	.384858 03	.388543 03	.392431 03	.396677 03	.401440 03	.407041 03	.414161 03	.418793 03
379.0	.380059 01	.381780 03	.385361 03	.389049 03	.392940 03	.397189 03	.401956 03	.407560 03	.414684 03	.419319 03
379.5	.380560 01	.382281 03	.385863 03	.389553 03	.393450 03	.397701 03	.402471 03	.408078 03	.415207 03	.419855 03
380.0	.381061 01	.382782 03	.386366 03	.390059 03	.393959 03	.398213 03	.402986 03	.408597 03	.415730 03	.420371 03
380.5	.381562 01	.383283 03	.386868 03	.390564 03	.394469 03	.398726 03	.403501 03	.409116 03	.416254 03	.420897 03
381.0	.382063 01	.383784 03	.387370 03	.391068 03	.394978 03	.399238 03	.404017 03	.409635 03	.416777 03	.421423 03
381.5	.382564 01	.384285 03	.387872 03	.391581 03	.395498 03	.399750 03	.404532 03	.410154 03	.417300 03	.421950 03
382.0	.383065 01	.384786 03	.388374 03	.392082 03	.396002 03	.400262 03	.405047 03	.410672 03	.417823 03	.422476 03
382.5	.383566 01	.385287 03	.388876 03	.392589 03	.396513 03	.400775 03	.405562 03	.411191 03	.418347 03	.423002 03
383.0	.384067 01	.385788 03	.389398 03	.393106 03	.397036 03	.401299 03	.406093 03	.411720 03	.418870 03	.423328 03
383.5	.384568 01	.386289 03	.389900 03	.393614 03	.397549 03	.401813 03	.406607 03	.412229 03	.419379 03	.424054 03
384.0	.385069 01	.386790 03	.390402 03	.394121 03	.398060 03	.402325 03	.407119 03	.412747 03	.419896 03	.424580 03
384.5	.385570 01	.387291 03	.390904 03	.394628 03	.398571 03	.402836 03	.407630 03	.413266 03	.420439 03	.425106 03
385.0	.386071 01	.387792 03	.391406 03	.395135 03	.399083 03	.403348 03	.408142 03	.413785 03	.420962 03	.425632 03
385.5	.386572 01	.388293 03	.391908 03	.395642 03	.399595 03	.403904 03	.408698 03	.414330 03	.421485 03	.426158 03
386.0	.387073 01	.388794 03	.392409 03	.396148 03	.400106 03	.404325 03	.409119 03	.414762 03	.422009 03	.426684 03
386.5	.387574 01	.389295 03	.392910 03	.396654 03	.400617 03	.404842 03	.409636 03	.415279 03	.422532 03	.427209 03
387.0	.388075 01	.389796 03	.393411 03	.397159 03	.401128 03	.405361 03	.410155 03	.415800 03	.423055 03	.427735 03

	.475000	.480000	.485000	.490000	.495000	.500000	.505000	.510000	.515000	.520000	.525000	.530000	.535000	.540000	.545000	.550000	.555000	.560000	.565000	.570000	.575000	.580000	.585000	.590000	.595000	.600000	.605000	.610000	.615000	.620000	.625000	.630000	.635000	.640000	.645000	.650000	.655000	.660000	.665000	.670000	.675000	.680000	.685000	.690000	.695000	.700000	.705000	.710000	.715000	.720000	.725000	.730000	.735000	.740000	.745000	.750000	.755000	.760000	.765000	.770000	.775000	.780000	.785000	.790000	.795000	.800000	.805000	.810000	.815000	.820000	.825000	.830000	.835000	.840000	.845000	.850000	.855000	.860000	.865000	.870000	.875000	.880000	.885000	.890000	.895000	.900000	.905000	.910000	.915000	.920000	.925000	.930000	.935000	.940000	.945000	.950000	.955000	.960000	.965000	.970000	.975000	.980000	.985000	.990000	.995000	1.000000	1.005000	1.010000	1.015000	1.020000	1.025000	1.030000	1.035000	1.040000	1.045000	1.050000	1.055000	1.060000	1.065000	1.070000	1.075000	1.080000	1.085000	1.090000	1.095000	1.100000	1.105000	1.110000	1.115000	1.120000	1.125000	1.130000	1.135000	1.140000	1.145000	1.150000	1.155000	1.160000	1.165000	1.170000	1.175000	1.180000	1.185000	1.190000	1.195000	1.200000	1.205000	1.210000	1.215000	1.220000	1.225000	1.230000	1.235000	1.240000	1.245000	1.250000	1.255000	1.260000	1.265000	1.270000	1.275000	1.280000	1.285000	1.290000	1.295000	1.300000	1.305000	1.310000	1.315000	1.320000	1.325000	1.330000	1.335000	1.340000	1.345000	1.350000	1.355000	1.360000	1.365000	1.370000	1.375000	1.380000	1.385000	1.390000	1.395000	1.400000	1.405000	1.410000	1.415000	1.420000	1.425000	1.430000	1.435000	1.440000	1.445000	1.450000	1.455000	1.460000	1.465000	1.470000	1.475000	1.480000	1.485000	1.490000	1.495000	1.500000	1.505000	1.510000	1.515000	1.520000	1.525000	1.530000	1.535000	1.540000	1.545000	1.550000	1.555000	1.560000	1.565000	1.570000	1.575000	1.580000	1.585000	1.590000	1.595000	1.600000	1.605000	1.610000	1.615000	1.620000	1.625000	1.630000	1.635000	1.640000	1.645000	1.650000	1.655000	1.660000	1.665000	1.670000	1.675000	1.680000	1.685000	1.690000	1.695000	1.700000	1.705000	1.710000	1.715000	1.720000	1.725000	1.730000	1.735000	1.740000	1.745000	1.750000	1.755000	1.760000	1.765000	1.770000	1.775000	1.780000	1.785000	1.790000	1.795000	1.800000	1.805000	1.810000	1.815000	1.820000	1.825000	1.830000	1.835000	1.840000	1.845000	1.850000	1.855000	1.860000	1.865000	1.870000	1.875000	1.880000	1.885000	1.890000	1.895000	1.900000	1.905000	1.910000	1.915000	1.920000	1.925000	1.930000	1.935000	1.940000	1.945000	1.950000	1.955000	1.960000	1.965000	1.970000	1.975000	1.980000	1.985000	1.990000	1.995000	2.000000	2.005000	2.010000	2.015000	2.020000	2.025000	2.030000	2.035000	2.040000	2.045000	2.050000	2.055000	2.060000	2.065000	2.070000	2.075000	2.080000	2.085000	2.090000	2.095000	2.100000	2.105000	2.110000	2.115000	2.120000
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Percentage Points of the χ^2 -Distribution Values of χ^2 in Terms of Q and ν

[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

χ^2	.75000	.65000	.55000	.45000	.35000	.25000	.20000	.15000	.10000	.07500
417.5	.41463 03	.41550 03	.41636 03	.41722 03	.41808 03	.41894 03	.41980 03	.42066 03	.42152 03	.42238 03
418.0	.41470 03	.41557 03	.41643 03	.41729 03	.41815 03	.41901 03	.41987 03	.42073 03	.42159 03	.42245 03
418.5	.41477 03	.41564 03	.41650 03	.41736 03	.41822 03	.41908 03	.41994 03	.42080 03	.42166 03	.42252 03
419.0	.41484 03	.41571 03	.41657 03	.41743 03	.41829 03	.41915 03	.42001 03	.42087 03	.42173 03	.42259 03
419.5	.41491 03	.41578 03	.41664 03	.41750 03	.41836 03	.41922 03	.42008 03	.42094 03	.42180 03	.42266 03
420.0	.41498 03	.41585 03	.41671 03	.41757 03	.41843 03	.41929 03	.42015 03	.42101 03	.42187 03	.42273 03
420.5	.41505 03	.41592 03	.41678 03	.41764 03	.41850 03	.41936 03	.42022 03	.42108 03	.42194 03	.42280 03
421.0	.41512 03	.41599 03	.41685 03	.41771 03	.41857 03	.41943 03	.42029 03	.42115 03	.42201 03	.42287 03
421.5	.41519 03	.41606 03	.41692 03	.41778 03	.41864 03	.41950 03	.42036 03	.42122 03	.42208 03	.42294 03
422.0	.41526 03	.41613 03	.41699 03	.41785 03	.41871 03	.41957 03	.42043 03	.42129 03	.42215 03	.42301 03
422.5	.41533 03	.41620 03	.41706 03	.41792 03	.41878 03	.41964 03	.42050 03	.42136 03	.42222 03	.42308 03
423.0	.41540 03	.41627 03	.41713 03	.41799 03	.41885 03	.41971 03	.42057 03	.42143 03	.42229 03	.42315 03
423.5	.41547 03	.41634 03	.41720 03	.41806 03	.41892 03	.41978 03	.42064 03	.42150 03	.42236 03	.42322 03
424.0	.41554 03	.41641 03	.41727 03	.41813 03	.41899 03	.41985 03	.42071 03	.42157 03	.42243 03	.42329 03
424.5	.41561 03	.41648 03	.41734 03	.41820 03	.41906 03	.41992 03	.42078 03	.42164 03	.42250 03	.42336 03
425.0	.41568 03	.41655 03	.41741 03	.41827 03	.41913 03	.42000 03	.42086 03	.42172 03	.42258 03	.42344 03
425.5	.41575 03	.41662 03	.41748 03	.41834 03	.41920 03	.42007 03	.42093 03	.42179 03	.42265 03	.42351 03
426.0	.41582 03	.41669 03	.41755 03	.41841 03	.41927 03	.42014 03	.42100 03	.42186 03	.42272 03	.42358 03
426.5	.41589 03	.41676 03	.41762 03	.41848 03	.41934 03	.42021 03	.42107 03	.42193 03	.42279 03	.42365 03
427.0	.41596 03	.41683 03	.41769 03	.41855 03	.41941 03	.42028 03	.42114 03	.42200 03	.42286 03	.42372 03
427.5	.41603 03	.41690 03	.41776 03	.41862 03	.41948 03	.42035 03	.42121 03	.42207 03	.42293 03	.42379 03
428.0	.41610 03	.41697 03	.41783 03	.41869 03	.41955 03	.42042 03	.42128 03	.42214 03	.42300 03	.42386 03
428.5	.41617 03	.41704 03	.41790 03	.41876 03	.41962 03	.42049 03	.42135 03	.42221 03	.42307 03	.42393 03
429.0	.41624 03	.41711 03	.41797 03	.41883 03	.41969 03	.42056 03	.42142 03	.42228 03	.42314 03	.42400 03
429.5	.41631 03	.41718 03	.41804 03	.41890 03	.41976 03	.42063 03	.42149 03	.42235 03	.42321 03	.42407 03
430.0	.41638 03	.41725 03	.41811 03	.41897 03	.41983 03	.42070 03	.42156 03	.42242 03	.42328 03	.42414 03
430.5	.41645 03	.41732 03	.41818 03	.41904 03	.41990 03	.42077 03	.42163 03	.42249 03	.42335 03	.42421 03
431.0	.41652 03	.41739 03	.41825 03	.41911 03	.42000 03	.42086 03	.42172 03	.42258 03	.42344 03	.42430 03
431.5	.41659 03	.41746 03	.41832 03	.41918 03	.42005 03	.42092 03	.42178 03	.42264 03	.42350 03	.42436 03
432.0	.41666 03	.41753 03	.41839 03	.41925 03	.42012 03	.42099 03	.42185 03	.42271 03	.42357 03	.42443 03
432.5	.41673 03	.41760 03	.41846 03	.41932 03	.42019 03	.42106 03	.42192 03	.42278 03	.42364 03	.42450 03
433.0	.41680 03	.41767 03	.41853 03	.41939 03	.42026 03	.42113 03	.42199 03	.42285 03	.42371 03	.42457 03
433.5	.41687 03	.41774 03	.41860 03	.41946 03	.42033 03	.42120 03	.42206 03	.42292 03	.42378 03	.42464 03
434.0	.41694 03	.41781 03	.41867 03	.41953 03	.42040 03	.42127 03	.42213 03	.42300 03	.42386 03	.42472 03
434.5	.41701 03	.41788 03	.41874 03	.41960 03	.42047 03	.42134 03	.42220 03	.42307 03	.42393 03	.42479 03
435.0	.41708 03	.41795 03	.41881 03	.41967 03	.42054 03	.42141 03	.42227 03	.42314 03	.42400 03	.42486 03
435.5	.41715 03	.41802 03	.41888 03	.41974 03	.42061 03	.42148 03	.42234 03	.42321 03	.42407 03	.42493 03
436.0	.41722 03	.41809 03	.41895 03	.41981 03	.42068 03	.42155 03	.42241 03	.42328 03	.42414 03	.42500 03
436.5	.41729 03	.41816 03	.41902 03	.41988 03	.42075 03	.42162 03	.42248 03	.42335 03	.42421 03	.42507 03
437.0	.41736 03	.41823 03	.41909 03	.41995 03	.42082 03	.42169 03	.42255 03	.42342 03	.42428 03	.42514 03
437.5	.41743 03	.41830 03	.41916 03	.42002 03	.42089 03	.42176 03	.42262 03	.42349 03	.42435 03	.42521 03
438.0	.41750 03	.41837 03	.41923 03	.42009 03	.42096 03	.42183 03	.42269 03	.42356 03	.42442 03	.42528 03
438.5	.41757 03	.41844 03	.41930 03	.42016 03	.42103 03	.42190 03	.42276 03	.42363 03	.42449 03	.42535 03
439.0	.41764 03	.41851 03	.41937 03	.42023 03	.42110 03	.42197 03	.42283 03	.42370 03	.42456 03	.42542 03
439.5	.41771 03	.41858 03	.41944 03	.42030 03	.42117 03	.42204 03	.42290 03	.42377 03	.42463 03	.42549 03
440.0	.41778 03	.41865 03	.41951 03	.42037 03	.42124 03	.42211 03	.42297 03	.42384 03	.42470 03	.42556 03
440.5	.41785 03	.41872 03	.41958 03	.42044 03	.42131 03	.42218 03	.42304 03	.42391 03	.42477 03	.42563 03
441.0	.41792 03	.41879 03	.41965 03	.42051 03	.42138 03	.42225 03	.42311 03	.42398 03	.42484 03	.42570 03
441.5	.41799 03	.41886 03	.41972 03	.42058 03	.42145 03	.42232 03	.42318 03	.42405 03	.42491 03	.42577 03
442.0	.41806 03	.41893 03	.41979 03	.42065 03	.42152 03	.42239 03	.42325 03	.42412 03	.42498 03	.42584 03
442.5	.41813 03	.41900 03	.41986 03	.42072 03	.42159 03	.42246 03	.42332 03	.42419 03	.42505 03	.42591 03
443.0	.41820 03	.41907 03	.41993 03	.42079 03	.42166 03	.42253 03	.42339 03	.42426 03	.42512 03	.42598 03
443.5	.41827 03	.41914 03	.42000 03	.42086 03	.42173 03	.42260 03	.42346 03	.42433 03	.42519 03	.42605 03
444.0	.41834 03	.41921 03	.42007 03	.42093 03	.42180 03	.42267 03	.42353 03	.42440 03	.42526 03	.42612 03
444.5	.41841 03	.41928 03	.42014 03	.42100 03	.42187 03	.42274 03	.42360 03	.42447 03	.42533 03	.42619 03
445.0	.41848 03	.41935 03	.42021 03	.42107 03	.42194 03	.42281 03	.42367 03	.42454 03	.42540 03	.42626 03
445.5	.41855 03	.41942 03	.42028 03	.42114 03	.42201 03	.42288 03	.42374 03	.42461 03	.42547 03	.42633 03
446.0	.41862 03	.41949 03	.42035 03	.42121 03	.42208 03	.42295 03	.42381 03	.42468 03	.42554 03	.42640 03
446.5	.41869 03	.41956 03	.42042 03	.42128 03	.42215 03	.42302 03	.42388 03	.42475 03	.42561 03	.42647 03
447.0	.41876 03	.41963 03	.42049 03	.42135 03	.42222 03	.42309 03	.42395 03	.42482 03	.42568 03	.42654 03
447.5	.41883 03	.41970 03	.42056 03	.42142 03	.42229 03	.42316 03	.42402 03	.42489 03	.42575 03	.42661 03
448.0	.41890 03	.41977 03	.42063 03	.42149 03	.42236 03	.42323 03	.42409 03	.42496 03	.42582 03	.42668 03
448.5	.41897 03	.41984 03	.42070 03	.42156 03	.42243 03	.42330 03	.42416 03	.42503 03	.42589 03	.42675 03
449.0	.41904 03	.41991 03	.42077 03	.42163 03	.42250 03	.42337 03	.42423 03	.42510 03	.42596 03	.42682 03
449.5	.41911 03	.42000 03	.42086 03	.42172 03	.42259 03	.42346 03	.42432 03	.42519 03	.42605 03	.42691 03
450.0	.41918 03	.42005 03	.42091 03	.42177 03	.42264 03	.42351 03	.42437 03	.42524 03	.42610 03	.42696 03
450.5	.41925 03	.42012 03	.42098 03	.42184 03	.42271 03	.42358 03	.42444 03	.42531 03	.42617 03	.42703 03
451.0	.41932 03	.42019 03	.42105 03	.42191 03	.42278 03	.42365 03	.42451 03	.42538 03	.42624 03	.42710 03
451.5	.41939 03	.42026 03	.42112 03	.42198 03	.42285 03	.42372 03	.42458 03	.42545 03	.42631 03	.42717 03
452.0	.41946 03	.42033 03	.42119 03	.42205 03	.42292 03	.42379 03	.42465 03	.42552 03	.42638 03	.42724 03
452.5	.41953 03	.42040 03	.42126 03	.42212 03	.42299 03	.42386 03	.42472 03	.42559 03	.42645 03	.42731 03
453.0	.41960 03	.42047 03	.42133 03	.42219 03	.42306 03	.42393 03	.42479 03	.42566 03	.42652 03	.42738 03
453.5	.41967 03	.42054 03	.42140 03	.42226 03	.42313 03	.42400 03	.42486 03	.42573 03	.42659 03	.42745 03
454.0	.41974 03	.42061 03	.42147 03	.42233 03	.42320 03	.42407 03	.42493 03	.42580 03	.42666 03	.42752 03
454.5	.41981 03	.42068 03	.42154 03	.42240 03	.42327 03	.42414 03	.42500 03	.42587 03	.42673 03	.42759 03
455.0	.41988 03	.42075 03	.42161 03	.42247 03	.42334 03	.42421 03	.42507 03	.42594 03	.42680 03	.42766 03
455.5	.41995 03	.42082 03	.42168 03	.42254 03	.42341 03	.42428 03	.42514 03	.42601 03	.42687 03	.42773 03
456.0	.41999 03	.42086 03	.42172 03	.42258 03	.42345 03	.42432 03	.42518 03	.42605 03	.42691 03	.42777 03
456.5	.42002 03	.42089 03	.42175 03	.42261 03	.42348 03	.42435 03	.42521 03	.42608 03	.42694 03	.42780 03
457.0	.42005 03	.42092 03	.42178 03	.42264 03	.42351 03	.42438 03	.42524 03	.42611 03	.42697 03	.42783 03
457.5	.42008 03	.42095 03	.42181 03	.42267 03	.42354 03	.42441 03	.42527 03	.42614 03	.42700 03	.42786 03
458.0	.42011 03	.42098 03	.42184 03	.42270 03	.42357 03	.42444 03	.42530 03	.42617 03	.42703 03	.42789 03
458.5	.42014 03	.42101 03	.42187 03	.42273 03	.42360 03	.42447 03	.42533 03	.42620 03	.42706 03	.42792 03
459.0	.42017 03	.42104 03	.42190 03	.42276 03	.42363 03	.42450 03	.42536 03	.42623 03	.42	

71 38549.

112

Percentage Points of the χ^2 -Distribution Expressed in Terms of Q and ν

[illegible]

	.010000	.012500	.015000	.020000	.025000	.030000	.035000	.040000	.045000	.050000	.055000	.060000	.065000	.070000	.075000	.080000	.085000	.090000	.095000	.100000	.105000	.110000	.115000	.120000	.125000	.130000	.135000	.140000	.145000	.150000	.155000	.160000	.165000	.170000	.175000	.180000	.185000	.190000	.195000	.200000	.205000	.210000	.215000	.220000	.225000	.230000	.235000	.240000	.245000	.250000	.255000	.260000	.265000	.270000	.275000	.280000	.285000	.290000	.295000	.300000	.305000	.310000	.315000	.320000	.325000	.330000	.335000	.340000	.345000	.350000	.355000	.360000	.365000	.370000	.375000	.380000	.385000	.390000	.395000	.400000	.405000	.410000	.415000	.420000	.425000	.430000	.435000	.440000	.445000	.450000	.455000	.460000	.465000	.470000	.475000	.480000	.485000	.490000	.495000	.500000	.505000	.510000	.515000	.520000	.525000	.530000	.535000	.540000	.545000	.550000	.555000	.560000	.565000	.570000	.575000	.580000	.585000	.590000	.595000	.600000	.605000	.610000	.615000	.620000	.625000	.630000	.635000	.640000	.645000	.650000	.655000	.660000	.665000	.670000	.675000	.680000	.685000	.690000	.695000	.700000	.705000	.710000	.715000	.720000	.725000	.730000	.735000	.740000	.745000	.750000	.755000	.760000	.765000	.770000	.775000	.780000	.785000	.790000	.795000	.800000	.805000	.810000	.815000	.820000	.825000	.830000	.835000	.840000	.845000	.850000	.855000	.860000	.865000	.870000	.875000	.880000	.885000	.890000	.895000	.900000	.905000	.910000	.915000	.920000	.925000	.930000	.935000	.940000	.945000	.950000	.955000	.960000	.965000	.970000	.975000	.980000	.985000	.990000	.995000	1.000000	1.005000	1.010000	1.015000	1.020000	1.025000	1.030000	1.035000	1.040000	1.045000	1.050000	1.055000	1.060000	1.065000	1.070000	1.075000	1.080000	1.085000	1.090000	1.095000	1.100000	1.105000	1.110000	1.115000	1.120000	1.125000	1.130000	1.135000	1.140000	1.145000	1.150000	1.155000	1.160000	1.165000	1.170000	1.175000	1.180000	1.185000	1.190000	1.195000	1.200000	1.205000	1.210000	1.215000	1.220000	1.225000	1.230000	1.235000	1.240000	1.245000	1.250000	1.255000	1.260000	1.265000	1.270000	1.275000	1.280000	1.285000	1.290000	1.295000	1.300000	1.305000	1.310000	1.315000	1.320000	1.325000	1.330000	1.335000	1.340000	1.345000	1.350000	1.355000	1.360000	1.365000	1.370000	1.375000	1.380000	1.385000	1.390000	1.395000	1.400000	1.405000	1.410000	1.415000	1.420000	1.425000	1.430000	1.435000	1.440000	1.445000	1.450000	1.455000	1.460000	1.465000	1.470000	1.475000	1.480000	1.485000	1.490000	1.495000	1.500000	1.505000	1.510000	1.515000	1.520000	1.525000	1.530000	1.535000	1.540000	1.545000	1.550000	1.555000	1.560000	1.565000	1.570000	1.575000	1.580000	1.585000	1.590000	1.595000	1.600000	1.605000	1.610000	1.615000	1.620000	1.625000	1.630000	1.635000	1.640000	1.645000	1.650000	1.655000	1.660000	1.665000	1.670000	1.675000	1.680000	1.685000	1.690000	1.695000	1.700000	1.705000	1.710000	1.715000	1.720000	1.72
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Percentile Points of the χ^2 Distribution
 Values of χ^2 in Terms of U and v

U	v	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.0	25.5	26.0	26.5	27.0	27.5	28.0	28.5	29.0	29.5	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0	34.5	35.0	35.5	36.0	36.5	37.0	37.5	38.0	38.5	39.0	39.5	40.0	40.5	41.0	41.5	42.0	42.5	43.0	43.5	44.0	44.5	45.0	45.5	46.0	46.5	47.0	47.5	48.0	48.5	49.0	49.5	50.0	50.5	51.0	51.5	52.0	52.5	53.0	53.5	54.0	54.5	55.0	55.5	56.0	56.5	57.0	57.5	58.0	58.5	59.0	59.5	60.0	60.5	61.0	61.5	62.0	62.5	63.0	63.5	64.0	64.5	65.0	65.5	66.0	66.5	67.0	67.5	68.0	68.5	69.0	69.5	70.0	70.5	71.0	71.5	72.0	72.5	73.0	73.5	74.0	74.5	75.0	75.5	76.0	76.5	77.0	77.5	78.0	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0	86.5	87.0	87.5	88.0	88.5	89.0	89.5	90.0	90.5	91.0	91.5	92.0	92.5	93.0	93.5	94.0	94.5	95.0	95.5	96.0	96.5	97.0	97.5	98.0	98.5	99.0	99.5	100.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
0.1	0.1	0.0001	0.0002	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0009	0.0010	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022	0.0023	0.0024	0.0025	0.0026	0.0027	0.0028	0.0029	0.0030	0.0031	0.0032	0.0033	0.0034	0.0035	0.0036	0.0037	0.0038	0.0039	0.0040	0.0041	0.0042	0.0043	0.0044	0.0045	0.0046	0.0047	0.0048	0.0049	0.0050	0.0051	0.0052	0.0053	0.0054	0.0055	0.0056	0.0057	0.0058	0.0059	0.0060	0.0061	0.0062	0.0063	0.0064	0.0065	0.0066	0.0067	0.0068	0.0069	0.0070	0.0071	0.0072	0.0073	0.0074	0.0075	0.0076	0.0077	0.0078	0.0079	0.0080	0.0081	0.0082	0.0083	0.0084	0.0085	0.0086	0.0087	0.0088	0.0089	0.0090	0.0091	0.0092	0.0093	0.0094	0.0095	0.0096	0.0097	0.0098	0.0099	0.0100	0.0101	0.0102	0.0103	0.0104	0.0105	0.0106	0.0107	0.0108	0.0109	0.0110	0.0111	0.0112	0.0113	0.0114	0.0115	0.0116	0.0117	0.0118	0.0119	0.0120	0.0121	0.0122	0.0123	0.0124	0.0125	0.0126	0.0127	0.0128	0.0129	0.0130	0.0131	0.0132	0.0133	0.0134	0.0135	0.0136	0.0137	0.0138	0.0139	0.0140	0.0141	0.0142	0.0143	0.0144	0.0145	0.0146	0.0147	0.0148	0.0149	0.0150	0.0151	0.0152	0.0153	0.0154	0.0155	0.0156	0.0157	0.0158	0.0159	0.0160	0.0161	0.0162	0.0163	0.0164	0.0165	0.0166	0.0167	0.0168	0.0169	0.0170	0.0171	0.0172	0.0173	0.0174	0.0175	0.0176	0.0177	0.0178	0.0179	0.0180	0.0181	0.0182	0.0183	0.0184	0.0185	0.0186	0.0187	0.0188	0.0189	0.0190	0.0191	0.0192	0.0193	0.0194	0.0195	0.0196	0.0197	0.0198	0.0199	0.0200	0.0201	0.0202	0.0203	0.0204	0.0205	0.0206	0.0207	0.0208	0.0209	0.0210	0.0211	0.0212	0.0213	0.0214	0.0215	0.0216	0.0217	0.0218	0.0219	0.0220	0.0221	0.0222	0.0223	0.0224	0.0225	0.0226	0.0227	0.0228	0.0229	0.0230	0.0231	0.0232	0.0233	0.0234	0.0235	0.0236	0.0237	0.0238	0.0239	0.0240	0.0241	0.0242	0.0243	0.0244	0.0245	0.0246	0.0247	0.0248	0.0249	0.0250	0.0251	0.0252	0.0253	0.0254	0.0255	0.0256	0.0257	0.0258	0.0259	0.0260	0.0261	0.0262	0.0263	0.0264	0.0265	0.0266	0.0267	0.0268	0.0269	0.0270	0.0271	0.0272	0.0273	0.0274	0.0275	0.0276	0.0277	0.0278	0.0279	0.0280	0.0281	0.0282	0.0283	0.0284	0.0285	0.0286	0.0287	0.0288	0.0289	0.0290	0.0291	0.0292	0.0293	0.0294	0.0295	0.0296	0.0297	0.0298	0.0299	0.0300	0.0301	0.0302	0.0303	0.0304	0.0305	0.0306	0.0307	0.0308	0.0309	0.0310	0.0311	0.0312	0.0313	0.0314	0.0315	0.0316	0.0317	0.0318	0.0319	0.0320	0.0321	0.0322	0.0323	0.0324	0.0325	0.0326	0.0327	0.0328	0.0329	0.0330	0.0331	0.0332	0.0333	0.0334	0.0335	0.0336	0.0337	0.0338	0.0339	0.0340	0.0341	0.0342	0.0343	0.0344	0.0345	0.0346	0.0347	0.0348	0.0349	0.0350	0.0351	0.0352	0.0353	0.0354	0.0355	0.0356	0.0357	0.0358	0.0359	0.0360	0.0361	0.0362	0.0363	0.0364	0.0365	0.0366	0.0367	0.0368	0.0369	0.0370	0.0371	0.0372	0.0373	0.0374	0.0375	0.0376	0.0377	0.0378	0.0379	0.0380	0.0381	0.0382	0.0383	0.0384	0.0385	0.0386	0.0387	0.0388	0.0389	0.0390	0.0391	0.0392	0.0393	0.0394	0.0395	0.0396	0.0397	0.0398	0.0399	0.0400	0.0401	0.0402	0.0403	0.0404	0.0405	0.0406	0.0407	0.0408	0.0409	0.0410	0.0411	0.0412	0.0413	0.0414	0.0415	0.0416	0.0417	0.0418	0.0419	0.0420	0.0421	0.0422	0.0423	0.0424	0.0425	0.0426	0.0427	0.0428	0.0429	0.0430	0.0431	0.0432	0.0433	0.0434	0.0435	0.0436	0.0437	0.0438	0.0439	0.0440	0.0441	0.0442	0.0443	0.0444	0.0445	0.0446	0.0447	0.0448	0.0449	0.0450	0.0451	0.0452	0.0453	0.0454	0.0455	0.0456	0.0457	0.0458	0.0459	0.0460	0.0461	0.0462	0.0463	0.0464	0.0465	0.0466	0.0467	0.0468	0.0469	0.0470	0.0471	0.0472	0.0473	0.0474	0.0475	0.0476	0.0477	0.0478	0.0479	0.0480	0.0481	0.0482	0.0483	0.0484	0.0485	0.0486	0.0487	0.0488	0.0489	0.0490	0.0491	0.0492	0.0493	0.0494	0.0495	0.0496	0.0497	0.0498	0.0499	0.0500	0.0501	0.0502	0.0503	0.0504	0.0505	0.0506	0.0507	0.0508	0.0509	0.0510	0.0511	0.0512	0.0513	0.0514	0.0515	0.0516	0.0517	0.0518	0.0519	0.0520	0.0521	0.0522	0.0523	0.0524	0.0525	0.0526	0.0527	0.0528	0.0529	0.0530	0.0531	0.0532	0.0533	0.0534	0.0535	0.0536	0.0537	0.0538	0.0539	0.0540	0.0541	0.0542	0.0543	0.0544	0.0545	0.0546	0.0547	0.0548	0.0549	0.0550	0.0551	0.0552	0.0553	0.0554	0.0555	0.0556	0.0557	0.0558	0.0559	0.0560	0.0561	0.0562	0.0563	0.0564	0.0565	0.0566	0.0567	0.0568	0.0569	0.0570	0.0571	0.0572	0.0573	0.0574	0.0575	0.0576	0.0577	0.0578	0.0579	0.0580	0.0581	0.0582	0.0583	0.0584	0.0585	0.0586	0.0587	0.0588	0.0589	0.0590	0.0591	0.0592	0.0593	0.0594	0.0595	0.0596	0.0597	0.0598	0.0599	0.0600	0.0601	0.0602	0.0603	0.0604	0.0605	0.0606	0.0607	0.0608	0.0609	0.0610	0.0611	0.0612	0.0613	0.0614	0.0615	0.0616	0.0617	0.0618	0.0619	0.0620	0.0621	0.0622	0.0623	0.0624	0.0625	0.0626	0.0627	0.0628	0.0629	0.0630	0.0631	0.0632	0.0633	0.0634	0.0635	0.0636	0.0637	0.0638	0.0639	0.0640	0.0641	0.0642	0.0643	0.0644	0.0645	0.0646	0.0647	0.0648	0.0649	0.0650	0.0651	0.0652	0.0653	0.0654	0.0655	0.0656	0.0657	0.0658	0.0659	0.0660	0.0661	0.0662	0.0663	0.0664	0.0665	0.0666	0.0667	0.0668	0.0669	0.0670	0.0671	0.0672	0.0673	0.0674	0.0675	0.0676	0.0677	0.0678	0.0679	0.0680	0.0681	0.0682	0.0683	0.0684	0.0685	0.0686	0.0687	0.0688	0.0689	0.0690	0.0691	0.0692	0.0693	0.0694	0.0695	0.0696	0.0697	0.0698	0.0699	0.0700	0.0701	0.0702	0.0703	0.0704	0.0705	0.0706	0.0707	0.0708	0.0709	0.0710	0.0711	0.0712	0.0713	0.0714	0.0715	0.0716	0.0717	0.0718	0.0719	0.0720	0.0721	0.0722	0.0723	0.0724	0.0725	0.0726	0.0727	0.0728	0.0729	0.0730	0.0731	0.0732	0.0733	0.0734	0.0735	0.0736	0.0737	0.0738	0.0739	0.0740	0.0741	0.0742	0.0743	0.0744	0.0745	0.0746	0.0747	0.0748	0.0749	0.0750	0.0751	0.0752	0.0753	0.0754	0.0755	0.0756	0.0757	0.0758	0.0759	0.0760	0.0761	0.0762	0.0763	0.0764	0.0765	0.0766	0.0767	0.0768	0.0769	0.0770	0.0771	0.0772	0.0773	0.0774	0.0775	0.0776	0.0777	0.0778	0.0779	0.0780	0.0781	0.0782	0.0783	0.0784	0.0785	0.0786	0.0787	0.0788	0.0789	0.0790	0.0791	0.0792	0.0793	0.0794	0.0795	0.0796	0.0797	0.0798	0.0799	0.0800	0.0801	0.0802	0.0803	0.0804	0.0805	0.0806	0.0807	0.0808	0.0809	0.0810	0.0811	0.0812	0.0813	0.0814	0.0815	0.0816	0.0817	0.0818	0.0819	0.0820	0.0821	0.0822	0.0823	0.0824	0.0825	0.0826	0.0827	0.0828	0.0829	0.0830	0.0831	0.0832	0.0833	0.0834	0.0835	0.0836	0.0837	0.0838	0.0839	0.0840	0.0841	0.0842	0.0843	0.0844	0.0845	0.0846	0.0847	0.0848	0.0849	0.0850	0.0851	0.0852	0.0853	0.0854	0.0855	0.0856	0.0857	0.0858	0.0859	0.0860	0.0861	0.0862	0.0863	0.0864	0.0865	0.0866	0.0867	0.0868	0.0869	0.0870	0.0871	0.0872	0.0873	0.0874	0.0875	0.0876	0.0877	0.0878	0.0879	0.0880	0.0881	0.0882	0.0883	0.0884	0.0885	0.0886	0.0887	0.0888	0.0889	0.0890	0.0891	0.0892	0.0893	0.0894	0.0895	0.0896	0.0897	0.0898	0.0899	0.0900	0.0901	0.0902	0.0903	0.0904	0.0905	0.0906	0.0907	0.0908	0.0909	0.0910	0.0911	0.0912	0.0913	0.0914	0.0915	0.0916	0.0917	0.0918	0.0919	0.0920	0.0921	0.0922	0.0923	0.0924	0.0925	0.0926	0.0927	0.0928	0.0929	0.0930	0.0931	0.0932	0.0933	0.0934	0.0935	0.0936	0.0937	0.0938	0.0939	0.0940	0.0941	0.0942	0.0943	0.0944	0.0945	0.0946	0.0947	0.0948	0.0949	0.0950	0

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of α and ν

α	ν	0.001	0.005	0.010	0.025	0.050	0.100	0.200	0.500	1.000	2.000	5.000	10.000	20.000	50.000	100.000	200.000	500.000	1000.000
1.0	1	16.013	10.828	8.327	6.635	5.024	3.841	2.706	1.635	1.083	0.717	0.502	0.375	0.270	0.193	0.143	0.107	0.080	0.060
1.0	2	18.475	12.592	9.590	7.378	5.591	4.605	3.571	2.448	1.876	1.386	1.054	0.818	0.619	0.464	0.354	0.273	0.207	0.154
1.0	3	21.024	14.454	11.341	8.797	6.944	5.821	4.641	3.437	2.837	2.178	1.676	1.286	0.978	0.728	0.549	0.419	0.318	0.237
1.0	4	23.685	16.266	12.838	10.215	8.313	6.958	5.781	4.299	3.642	2.877	2.204	1.703	1.303	0.993	0.743	0.564	0.424	0.323
1.0	5	26.296	18.000	14.151	11.591	9.348	7.779	6.626	5.024	4.013	3.153	2.429	1.928	1.527	1.117	0.867	0.688	0.528	0.407
1.0	6	28.757	19.675	15.338	12.833	10.237	8.558	7.378	5.591	4.533	3.571	2.706	2.178	1.776	1.366	1.015	0.815	0.635	0.494
1.0	7	31.159	21.277	16.422	13.916	11.020	9.378	8.034	6.349	5.024	4.013	3.153	2.429	1.928	1.527	1.117	0.867	0.688	0.528
1.0	8	33.409	22.797	17.401	14.838	11.791	10.090	8.716	7.042	5.591	4.533	3.571	2.706	2.178	1.776	1.366	1.015	0.815	0.635
1.0	9	35.578	24.278	18.307	15.708	12.549	10.891	9.502	7.779	6.349	5.024	4.013	3.153	2.429	1.928	1.527	1.117	0.867	0.688
1.0	10	37.675	25.718	19.151	16.516	13.277	11.668	10.215	8.558	7.042	5.591	4.533	3.571	2.706	2.178	1.776	1.366	1.015	0.815
1.0	11	39.696	27.132	19.937	17.272	13.978	12.401	10.891	9.378	7.779	6.349	5.024	4.013	3.153	2.429	1.928	1.527	1.117	0.867
1.0	12	41.633	28.522	20.675	18.000	14.658	13.182	11.591	10.237	8.558	7.378	6.054	4.733	3.757	2.928	2.178	1.776	1.366	1.015
1.0	13	43.482	29.891	21.367	18.691	15.319	13.938	12.237	10.891	9.378	8.034	6.349	5.024	4.013	3.153	2.429	1.928	1.527	1.117
1.0	14	45.247	31.239	22.026	19.353	15.987	14.658	12.833	11.591	10.237	8.716	7.042	5.591	4.533	3.571	2.706	2.178	1.776	1.366
1.0	15	46.923	32.566	22.654	19.985	16.600	15.319	13.491	12.237	10.891	9.502	7.779	6.349	5.024	4.013	3.153	2.429	1.928	1.527
1.0	16	48.514	33.874	23.254	20.585	17.166	15.987	14.091	12.833	11.591	10.237	8.716	7.042	5.591	4.533	3.571	2.706	2.178	1.776
1.0	17	50.024	35.165	23.828	21.161	17.691	16.600	14.658	13.491	12.237	10.891	9.502	7.779	6.349	5.024	4.013	3.153	2.429	1.928
1.0	18	51.456	36.441	24.378	21.718	18.178	17.166	15.215	14.091	12.833	11.591	10.237	8.716	7.042	5.591	4.533	3.571	2.706	2.178
1.0	19	52.812	37.703	24.906	22.258	18.630	17.691	15.766	14.658	13.491	12.237	10.891	9.502	7.779	6.349	5.024	4.013	3.153	2.429
1.0	20	54.097	38.952	25.414	22.781	19.059	18.178	16.250	15.215	14.091	12.833	11.591	10.237	8.716	7.042	5.591	4.533	3.571	2.706
1.0	21	55.314	40.189	25.899	23.288	19.468	18.630	16.711	15.766	14.658	13.491	12.237	10.891	9.502	7.779	6.349	5.024	4.013	3.153
1.0	22	56.466	41.414	26.364	23.779	19.759	19.059	17.151	16.250	15.215	14.091	12.833	11.591	10.237	8.716	7.042	5.591	4.533	3.571
1.0	23	57.646	42.628	26.811	24.256	20.034	19.468	17.591	16.711	15.766	14.658	13.491	12.237	10.891	9.502	7.779	6.349	5.024	4.013
1.0	24	58.847	43.832	27.241	24.719	20.294	19.878	18.000	17.151	16.250	15.215	14.091	12.833	11.591	10.237	8.716	7.042	5.591	4.533
1.0	25	59.972	45.027	27.646	25.169	20.541	20.272	18.422	17.591	16.711	15.766	14.658	13.491	12.237	10.891	9.502	7.779	6.349	5.024
1.0	26	61.124	46.212	28.037	25.616	20.777	20.641	18.853	18.000	17.151	16.250	15.215	14.091	12.833	11.591	10.237	8.716	7.042	5.591
1.0	27	62.296	47.387	28.414	26.059	21.000	21.000	19.266	18.422	17.591	16.711	15.766	14.658	13.491	12.237	10.891	9.502	7.779	6.349
1.0	28	63.488	48.553	28.778	26.499	21.237	21.367	19.633	18.853	18.000	17.151	16.250	15.215	14.091	12.833	11.591	10.237	8.716	7.042
1.0	29	64.692	49.710	29.130	26.936	21.468	21.718	20.000	19.266	18.422	17.591	16.711	15.766	14.658	13.491	12.237	10.891	9.502	7.779
1.0	30	65.908	50.858	29.471	27.369	21.694	22.067	20.422	19.633	18.853	18.000	17.151	16.250	15.215	14.091	12.833	11.591	10.237	8.716
1.0	31	67.136	51.998	29.799	27.798	21.916	22.414	20.777	20.000	19.266	18.422	17.591	16.711	15.766	14.658	13.491	12.237	10.891	9.502
1.0	32	68.376	53.130	30.116	28.225	22.134	22.759	21.125	20.422	19.633	18.853	18.000	17.151	16.250	15.215	14.091	12.833	11.591	10.237
1.0	33	69.628	54.254	30.423	28.649	22.350	23.102	21.481	20.777	20.000	19.266	18.422	17.591	16.711	15.766	14.658	13.491	12.237	10.891
1.0	34	70.892	55.371	30.721	29.070	22.562	23.441	21.833	21.125	20.422	19.633	18.853	18.000	17.151	16.250	15.215	14.091	12.833	11.591
1.0	35	72.168	56.481	31.010	29.488	22.771	23.780	22.181	21.481	20.777	20.000	19.266	18.422	17.591	16.711	15.766	14.658	13.491	12.237
1.0	36	73.456	57.584	31.299	29.903	22.978	24.117	22.527	21.833	21.125	20.422	19.633	18.853	18.000	17.151	16.250	15.215	14.091	12.833
1.0	37	74.756	58.680	31.579	30.315	23.182	24.452	22.871	22.181	21.481	20.777	20.000	19.266	18.422	17.591	16.711	15.766	14.658	13.491
1.0	38	76.068	59.769	31.859	30.719	23.385	24.786	23.213	22.527	21.833	21.125	20.422	19.633	18.853	18.000	17.151	16.250	15.215	14.091
1.0	39	77.392	60.851	32.130	31.120	23.586	25.119	23.646	22.871	22.181	21.481	20.777	20.000	19.266	18.422	17.591	16.711	15.766	14.658
1.0	40	78.728	61.926	32.393	31.518	23.785	25.450	24.077	23.213	22.527	21.833	21.125	20.422	19.633	18.853	18.000	17.151	16.250	15.215
1.0	41	80.076	62.994	32.648	31.913	23.982	25.780	24.500	23.646	22.871	22.181	21.481	20.777	20.000	19.266	18.422	17.591	16.711	15.766
1.0	42	81.436	64.056	32.904	32.305	24.178	26.109	24.919	24.077	23.213	22.527	21.833	21.125	20.422	19.633	18.853	18.000	17.151	16.250
1.0	43	82.808	65.112	33.151	32.694	24.373	26.437	25.334	24.500	23.646	22.871	22.181	21.481	20.777	20.000	19.266	18.422	17.591	16.711
1.0	44	84.192	66.163	33.399	33.080	24.566	26.764	25.755	24.919	24.077	23.213	22.527	21.833	21.125	20.422	19.633	18.853	18.000	17.151
1.0	45	85.588	67.209	33.647	33.463	24.758	27.090	26.173	25.334	24.500	23.646	22.871	22.181	21.481	20.777	20.000	19.266	18.422	17.591
1.0	46	86.996	68.251	33.895	33.844	24.948	27.414	26.589	25.755	24.919	24.077	23.213	22.527	21.833	21.125	20.422	19.633	18.853	18.000
1.0	47	88.416	69.289	34.143	34.222	25.137	27.737	26.999	26.173	25.334	24.500	23.646	22.871	22.181	21.481	20.777	20.000	19.266	18.422
1.0	48	89.848	70.323	34.391	34.598	25.324	28.059	27.406	26.589	25.755	24.919	24.077	23.213	22.527	21.833	21.125	20.422	19.633	18.853
1.0	49	91.292	71.353	34.639	34.972	25.510	28.379	27.771	26.999	26.173	25.334	24.500	23.646	22.871	22.181	21.481	20.777	20.000	19.266
1.0	50	92.748	72.379	34.887	35.344	25.695	28.698	28.134	27.406	26.589	25.755	24.919	24.077	23.213	22.527	21.833	21.125	20.422	19.633
1.0	51	94.216	73.401	35.135	35.710	25.879	29.015	28.488	27.771	26.999	26.173	25.334	24.500	23.646	22.871	22.181	21.481	20.777	20.000
1.0	52	95.696	74.419	35.383	36.074	26.062	29.330	28.837	28.134	27.406	26.589	25.755	24.919	24.077	23.213	22.527	21.833	21.125	20.422
1.0	53	97.188	75.433	35.631	36.436	26.245	29.643	29.181	28.488	27.771	26.999	26.173	25.334	24.500	23.646	22.871	22.181	21.481	20.777
1.0	54	98.692	76.443	35.879	36.796	26.427	29.954	29.527	28.837	28.134	27.406	26.589	25.755	24.919	24.077	23.213	22.527	21.833	21.125
1.0	55	100.208	77.449	36.127	37.154	26.608	30.264	29.869	29.181	28.488	27.771	26.999	26.173	25.334	24.500	23.646	22.871	22.181	21.481
1.0	56	101.736	78.451	36.375	37.510	26.789	30.572	30.213	29.527	28.837	28.134	27.406	26.589	25.755	24.919	24.077	23.213	22.527	21.833
1.0	57	103.276	79.450	36.623	37.864	26.969	30.879	30.559	29.869	29.									

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.05000	.05500	.06000	.06500	.07000	.07500	.08000	.08500	.09000	.09500	.10000
17.00	27.487	27.500	27.513	27.526	27.539	27.552	27.565	27.578	27.591	27.604	27.617
17.05	27.526	27.539	27.552	27.565	27.578	27.591	27.604	27.617	27.630	27.643	27.656
17.10	27.565	27.578	27.591	27.604	27.617	27.630	27.643	27.656	27.669	27.682	27.695
17.15	27.604	27.617	27.630	27.643	27.656	27.669	27.682	27.695	27.708	27.721	27.734
17.20	27.643	27.656	27.669	27.682	27.695	27.708	27.721	27.734	27.747	27.760	27.773
17.25	27.682	27.695	27.708	27.721	27.734	27.747	27.760	27.773	27.786	27.799	27.812
17.30	27.721	27.734	27.747	27.760	27.773	27.786	27.799	27.812	27.825	27.838	27.851
17.35	27.760	27.773	27.786	27.799	27.812	27.825	27.838	27.851	27.864	27.877	27.890
17.40	27.799	27.812	27.825	27.838	27.851	27.864	27.877	27.890	27.903	27.916	27.929
17.45	27.838	27.851	27.864	27.877	27.890	27.903	27.916	27.929	27.942	27.955	27.968
17.50	27.877	27.890	27.903	27.916	27.929	27.942	27.955	27.968	27.981	27.994	28.007
17.55	27.916	27.929	27.942	27.955	27.968	27.981	27.994	28.007	28.020	28.033	28.046
17.60	27.955	27.968	27.981	27.994	28.007	28.020	28.033	28.046	28.059	28.072	28.085
17.65	27.994	28.007	28.020	28.033	28.046	28.059	28.072	28.085	28.098	28.111	28.124
17.70	28.033	28.046	28.059	28.072	28.085	28.098	28.111	28.124	28.137	28.150	28.163
17.75	28.072	28.085	28.098	28.111	28.124	28.137	28.150	28.163	28.176	28.189	28.202
17.80	28.111	28.124	28.137	28.150	28.163	28.176	28.189	28.202	28.215	28.228	28.241
17.85	28.150	28.163	28.176	28.189	28.202	28.215	28.228	28.241	28.254	28.267	28.280
17.90	28.189	28.202	28.215	28.228	28.241	28.254	28.267	28.280	28.293	28.306	28.319
17.95	28.228	28.241	28.254	28.267	28.280	28.293	28.306	28.319	28.332	28.345	28.358
18.00	28.267	28.280	28.293	28.306	28.319	28.332	28.345	28.358	28.371	28.384	28.397
18.05	28.306	28.319	28.332	28.345	28.358	28.371	28.384	28.397	28.410	28.423	28.436
18.10	28.345	28.358	28.371	28.384	28.397	28.410	28.423	28.436	28.449	28.462	28.475
18.15	28.384	28.397	28.410	28.423	28.436	28.449	28.462	28.475	28.488	28.501	28.514
18.20	28.423	28.436	28.449	28.462	28.475	28.488	28.501	28.514	28.527	28.540	28.553
18.25	28.462	28.475	28.488	28.501	28.514	28.527	28.540	28.553	28.566	28.579	28.592
18.30	28.501	28.514	28.527	28.540	28.553	28.566	28.579	28.592	28.605	28.618	28.631
18.35	28.540	28.553	28.566	28.579	28.592	28.605	28.618	28.631	28.644	28.657	28.670
18.40	28.579	28.592	28.605	28.618	28.631	28.644	28.657	28.670	28.683	28.696	28.709
18.45	28.618	28.631	28.644	28.657	28.670	28.683	28.696	28.709	28.722	28.735	28.748
18.50	28.657	28.670	28.683	28.696	28.709	28.722	28.735	28.748	28.761	28.774	28.787
18.55	28.696	28.709	28.722	28.735	28.748	28.761	28.774	28.787	28.800	28.813	28.826
18.60	28.735	28.748	28.761	28.774	28.787	28.800	28.813	28.826	28.839	28.852	28.865
18.65	28.774	28.787	28.800	28.813	28.826	28.839	28.852	28.865	28.878	28.891	28.904
18.70	28.813	28.826	28.839	28.852	28.865	28.878	28.891	28.904	28.917	28.930	28.943
18.75	28.852	28.865	28.878	28.891	28.904	28.917	28.930	28.943	28.956	28.969	28.982
18.80	28.891	28.904	28.917	28.930	28.943	28.956	28.969	28.982	28.995	29.008	29.021
18.85	28.930	28.943	28.956	28.969	28.982	28.995	29.008	29.021	29.034	29.047	29.060
18.90	28.969	28.982	28.995	29.008	29.021	29.034	29.047	29.060	29.073	29.086	29.099
18.95	29.008	29.021	29.034	29.047	29.060	29.073	29.086	29.099	29.112	29.125	29.138
19.00	29.047	29.060	29.073	29.086	29.099	29.112	29.125	29.138	29.151	29.164	29.177
19.05	29.086	29.099	29.112	29.125	29.138	29.151	29.164	29.177	29.190	29.203	29.216
19.10	29.125	29.138	29.151	29.164	29.177	29.190	29.203	29.216	29.229	29.242	29.255
19.15	29.164	29.177	29.190	29.203	29.216	29.229	29.242	29.255	29.268	29.281	29.294
19.20	29.203	29.216	29.229	29.242	29.255	29.268	29.281	29.294	29.307	29.320	29.333
19.25	29.242	29.255	29.268	29.281	29.294	29.307	29.320	29.333	29.346	29.359	29.372
19.30	29.281	29.294	29.307	29.320	29.333	29.346	29.359	29.372	29.385	29.398	29.411
19.35	29.320	29.333	29.346	29.359	29.372	29.385	29.398	29.411	29.424	29.437	29.450
19.40	29.359	29.372	29.385	29.398	29.411	29.424	29.437	29.450	29.463	29.476	29.489
19.45	29.398	29.411	29.424	29.437	29.450	29.463	29.476	29.489	29.502	29.515	29.528
19.50	29.437	29.450	29.463	29.476	29.489	29.502	29.515	29.528	29.541	29.554	29.567
19.55	29.476	29.489	29.502	29.515	29.528	29.541	29.554	29.567	29.580	29.593	29.606
19.60	29.515	29.528	29.541	29.554	29.567	29.580	29.593	29.606	29.619	29.632	29.645
19.65	29.554	29.567	29.580	29.593	29.606	29.619	29.632	29.645	29.658	29.671	29.684
19.70	29.593	29.606	29.619	29.632	29.645	29.658	29.671	29.684	29.697	29.710	29.723
19.75	29.632	29.645	29.658	29.671	29.684	29.697	29.710	29.723	29.736	29.749	29.762
19.80	29.671	29.684	29.697	29.710	29.723	29.736	29.749	29.762	29.775	29.788	29.801
19.85	29.710	29.723	29.736	29.749	29.762	29.775	29.788	29.801	29.814	29.827	29.840
19.90	29.749	29.762	29.775	29.788	29.801	29.814	29.827	29.840	29.853	29.866	29.879
19.95	29.788	29.801	29.814	29.827	29.840	29.853	29.866	29.879	29.892	29.905	29.918
20.00	29.827	29.840	29.853	29.866	29.879	29.892	29.905	29.918	29.931	29.944	29.957
20.05	29.866	29.879	29.892	29.905	29.918	29.931	29.944	29.957	29.970	29.983	29.996
20.10	29.905	29.918	29.931	29.944	29.957	29.970	29.983	29.996	30.009	30.022	30.035
20.15	29.944	29.957	29.970	29.983	29.996	30.009	30.022	30.035	30.048	30.061	30.074
20.20	29.983	29.996	30.009	30.022	30.035	30.048	30.061	30.074	30.087	30.100	30.113
20.25	30.022	30.035	30.048	30.061	30.074	30.087	30.100	30.113	30.126	30.139	30.152
20.30	30.061	30.074	30.087	30.100	30.113	30.126	30.139	30.152	30.165	30.178	30.191
20.35	30.100	30.113	30.126	30.139	30.152	30.165	30.178	30.191	30.204	30.217	30.230
20.40	30.139	30.152	30.165	30.178	30.191	30.204	30.217	30.230	30.243	30.256	30.269
20.45	30.178	30.191	30.204	30.217	30.230	30.243	30.256	30.269	30.282	30.295	30.308
20.50	30.217	30.230	30.243	30.256	30.269	30.282	30.295	30.308	30.321	30.334	30.347
20.55	30.256	30.269	30.282	30.295	30.308	30.321	30.334	30.347	30.360	30.373	30.386
20.60	30.295	30.308	30.321	30.334	30.347	30.360	30.373	30.386	30.399	30.412	30.425
20.65	30.334	30.347	30.360	30.373	30.386	30.399	30.412	30.425	30.438	30.451	30.464
20.70	30.373	30.386	30.399	30.412	30.425	30.438	30.451	30.464	30.477	30.490	30.503
20.75	30.412	30.425	30.438	30.451	30.464	30.477	30.490	30.503	30.516	30.529	30.542
20.80	30.451	30.464	30.477	30.490	30.503	30.516	30.529	30.542	30.555	30.568	30.581
20.85	30.490	30.503	30.516	30.529	30.542	30.555	30.568	30.581	30.594	30.607	30.620
20.90	30.529	30.542	30.555	30.568	30.581	30.594	30.607	30.620	30.633	30.646	30.659
20.95	30.568	30.581	30.594	30.607	30.620	30.633	30.646	30.659	30.672	30.685	30.698
21.00	30.607	30.620	30.633	30.646	30.659	30.672	30.685	30.698	30.711	30.724	30.737
21.05	30.646	30.659	30.672	30.685	30.698	30.711	30.724	30.737	30.750	30.763	30.776
21.10	30.685	30.698	30.711	30.724	30.737	30.750	30.763	30.776	30.789	30.802	30.815
21.15	30.724	30.737	30.750	30.763	30.776	30.789	30.802	30.815	30.828	30.841	30.854
21.20	30.763	30.776	30.789	30.802	30.815	30.828	30.841	30.854	30.867	30.880	30.893
21.25	30.802	30.815	30.828	30.841	30.854	30.867	30.880	30.893	30.906	30.919	30.932
21.30	30.841	30.854	30.867	30.880	30.893	30.906	30.919	30.932	30.945	30.958	30.971
21.35	30.880	30.893	30.906	30.919	30.932	30.945	30.958	30.971	30.984	30.997	31.010
21.40	30.919	30.932	30.945	30.958	30.971	30.984	30.997	31.010	31.023	31.036	31.049
21.45	30.958	30.971	30.984								

Percentage Points of the χ^2 Distribution

[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and p

$1-Q$	.050000	.045000	.040000	.035000	.030000	.025000	.020000	.015000	.012500	.010000
40.00	.557585 02	.561235 02	.564885 02	.568535 02	.572185 02	.575835 02	.579485 02	.583135 02	.586785 02	.590435 02
40.25	.562577 02	.566227 02	.569877 02	.573527 02	.577177 02	.580827 02	.584477 02	.588127 02	.591777 02	.595427 02
40.50	.567569 02	.571219 02	.574869 02	.578519 02	.582169 02	.585819 02	.589469 02	.593119 02	.596769 02	.600419 02
40.75	.572561 02	.576211 02	.579861 02	.583511 02	.587161 02	.590811 02	.594461 02	.598111 02	.601761 02	.605411 02
41.00	.577553 02	.581203 02	.584853 02	.588503 02	.592153 02	.595803 02	.599453 02	.603103 02	.606753 02	.610403 02
41.25	.582545 02	.586195 02	.589845 02	.593495 02	.597145 02	.600795 02	.604445 02	.608095 02	.611745 02	.615395 02
41.50	.587537 02	.591187 02	.594837 02	.598487 02	.602137 02	.605787 02	.609437 02	.613087 02	.616737 02	.620387 02
41.75	.592529 02	.596179 02	.599829 02	.603479 02	.607129 02	.610779 02	.614429 02	.618079 02	.621729 02	.625379 02
42.00	.597521 02	.601171 02	.604821 02	.608471 02	.612121 02	.615771 02	.619421 02	.623071 02	.626721 02	.630371 02
42.25	.602513 02	.606163 02	.609813 02	.613463 02	.617113 02	.620763 02	.624413 02	.628063 02	.631713 02	.635363 02
42.50	.607505 02	.611155 02	.614805 02	.618455 02	.622105 02	.625755 02	.629405 02	.633055 02	.636705 02	.640355 02
42.75	.612497 02	.616147 02	.619797 02	.623447 02	.627097 02	.630747 02	.634397 02	.638047 02	.641697 02	.645347 02
43.00	.617489 02	.621139 02	.624789 02	.628439 02	.632089 02	.635739 02	.639389 02	.643039 02	.646689 02	.650339 02
43.25	.622481 02	.626131 02	.629781 02	.633431 02	.637081 02	.640731 02	.644381 02	.648031 02	.651681 02	.655331 02
43.50	.627473 02	.631123 02	.634773 02	.638423 02	.642073 02	.645723 02	.649373 02	.653023 02	.656673 02	.660323 02
43.75	.632465 02	.636115 02	.639765 02	.643415 02	.647065 02	.650715 02	.654365 02	.658015 02	.661665 02	.665315 02
44.00	.637457 02	.641107 02	.644757 02	.648407 02	.652057 02	.655707 02	.659357 02	.663007 02	.666657 02	.670307 02
44.25	.642449 02	.646099 02	.649749 02	.653399 02	.657049 02	.660699 02	.664349 02	.667999 02	.671649 02	.675299 02
44.50	.647441 02	.651091 02	.654741 02	.658391 02	.662041 02	.665691 02	.669341 02	.672991 02	.676641 02	.680291 02
44.75	.652433 02	.656083 02	.659733 02	.663383 02	.667033 02	.670683 02	.674333 02	.677983 02	.681633 02	.685283 02
45.00	.657425 02	.661075 02	.664725 02	.668375 02	.672025 02	.675675 02	.679325 02	.682975 02	.686625 02	.690275 02
45.25	.662417 02	.666067 02	.669717 02	.673367 02	.677017 02	.680667 02	.684317 02	.687967 02	.691617 02	.695267 02
45.50	.667409 02	.671059 02	.674709 02	.678359 02	.682009 02	.685659 02	.689309 02	.692959 02	.696609 02	.700259 02
45.75	.672401 02	.676051 02	.679701 02	.683351 02	.687001 02	.690651 02	.694301 02	.697951 02	.701601 02	.705251 02
46.00	.677393 02	.681043 02	.684693 02	.688343 02	.691993 02	.695643 02	.699293 02	.702943 02	.706593 02	.710243 02
46.25	.682385 02	.686035 02	.689685 02	.693335 02	.696985 02	.700635 02	.704285 02	.707935 02	.711585 02	.715235 02
46.50	.687377 02	.691027 02	.694677 02	.698327 02	.701977 02	.705627 02	.709277 02	.712927 02	.716577 02	.720227 02
46.75	.692369 02	.696019 02	.699669 02	.703319 02	.706969 02	.710619 02	.714269 02	.717919 02	.721569 02	.725219 02
47.00	.697361 02	.701011 02	.704661 02	.708311 02	.711961 02	.715611 02	.719261 02	.722911 02	.726561 02	.730211 02
47.25	.702353 02	.706003 02	.709653 02	.713303 02	.716953 02	.720603 02	.724253 02	.727903 02	.731553 02	.735203 02
47.50	.707345 02	.710995 02	.714645 02	.718295 02	.721945 02	.725595 02	.729245 02	.732895 02	.736545 02	.740195 02
47.75	.712337 02	.715987 02	.719637 02	.723287 02	.726937 02	.730587 02	.734237 02	.737887 02	.741537 02	.745187 02
48.00	.717329 02	.720979 02	.724629 02	.728279 02	.731929 02	.735579 02	.739229 02	.742879 02	.746529 02	.750179 02
48.25	.722321 02	.725971 02	.729621 02	.733271 02	.736921 02	.740571 02	.744221 02	.747871 02	.751521 02	.755171 02
48.50	.727313 02	.730963 02	.734613 02	.738263 02	.741913 02	.745563 02	.749213 02	.752863 02	.756513 02	.760163 02
48.75	.732305 02	.735955 02	.739605 02	.743255 02	.746905 02	.750555 02	.754205 02	.757855 02	.761505 02	.765155 02
49.00	.737297 02	.740947 02	.744597 02	.748247 02	.751897 02	.755547 02	.759197 02	.762847 02	.766497 02	.770147 02
49.25	.742289 02	.745939 02	.749589 02	.753239 02	.756889 02	.760539 02	.764189 02	.767839 02	.771489 02	.775139 02
49.50	.747281 02	.750931 02	.754581 02	.758231 02	.761881 02	.765531 02	.769181 02	.772831 02	.776481 02	.780131 02
49.75	.752273 02	.755923 02	.759573 02	.763223 02	.766873 02	.770523 02	.774173 02	.777823 02	.781473 02	.785123 02
50.00	.757265 02	.760915 02	.764565 02	.768215 02	.771865 02	.775515 02	.779165 02	.782815 02	.786465 02	.790115 02
50.25	.762257 02	.765907 02	.769557 02	.773207 02	.776857 02	.780507 02	.784157 02	.787807 02	.791457 02	.795107 02
50.50	.767249 02	.770899 02	.774549 02	.778199 02	.781849 02	.785499 02	.789149 02	.792799 02	.796449 02	.800099 02
50.75	.772241 02	.775891 02	.779541 02	.783191 02	.786841 02	.790491 02	.794141 02	.797791 02	.801441 02	.805091 02
51.00	.777233 02	.780883 02	.784533 02	.788183 02	.791833 02	.795483 02	.799133 02	.802783 02	.806433 02	.810083 02
51.25	.782225 02	.785875 02	.789525 02	.793175 02	.796825 02	.800475 02	.804125 02	.807775 02	.811425 02	.815075 02
51.50	.787217 02	.790867 02	.794517 02	.798167 02	.801817 02	.805467 02	.809117 02	.812767 02	.816417 02	.820067 02
51.75	.792209 02	.795859 02	.799509 02	.803159 02	.806809 02	.810459 02	.814109 02	.817759 02	.821409 02	.825059 02
52.00	.797201 02	.800851 02	.804501 02	.808151 02	.811801 02	.815451 02	.819101 02	.822751 02	.826401 02	.830051 02
52.25	.802193 02	.805843 02	.809493 02	.813143 02	.816793 02	.820443 02	.824093 02	.827743 02	.831393 02	.835043 02
52.50	.807185 02	.810835 02	.814485 02	.818135 02	.821785 02	.825435 02	.829085 02	.832735 02	.836385 02	.840035 02
52.75	.812177 02	.815827 02	.819477 02	.823127 02	.826777 02	.830427 02	.834077 02	.837727 02	.841377 02	.845027 02
53.00	.817169 02	.820819 02	.824469 02	.828119 02	.831769 02	.835419 02	.839069 02	.842719 02	.846369 02	.850019 02
53.25	.822161 02	.825811 02	.829461 02	.833111 02	.836761 02	.840411 02	.844061 02	.847711 02	.851361 02	.855011 02
53.50	.827153 02	.830803 02	.834453 02	.838103 02	.841753 02	.845403 02	.849053 02	.852703 02	.856353 02	.860003 02
53.75	.832145 02	.835795 02	.839445 02	.843095 02	.846745 02	.850395 02	.854045 02	.857695 02	.861345 02	.864995 02
54.00	.837137 02	.840787 02	.844437 02	.848087 02	.851737 02	.855387 02	.859037 02	.862687 02	.866337 02	.869987 02
54.25	.842129 02	.845779 02	.849429 02	.853079 02	.856729 02	.860379 02	.864029 02	.867679 02	.871329 02	.874979 02
54.50	.847121 02	.850771 02	.854421 02	.858071 02	.861721 02	.865371 02	.869021 02	.872671 02	.876321 02	.879971 02
54.75	.852113 02	.855763 02	.859413 02	.863063 02	.866713 02	.870363 02	.874013 02	.877663 02	.881313 02	.884963 02
55.00	.857105 02	.860755 02	.864405 02	.868055 02	.871705 02	.875355 02	.879005 02	.882655 02	.886305 02	.889955 02
55.25	.862097 02	.865747 02	.869397 02	.873047 02	.876697 02	.880347 02	.883997 02	.887647 02	.891297 02	.894947 02
55.50	.867089 02	.870739 02	.874389 02	.878039 02	.881689 02	.885339 02	.888989 02	.892639 02	.896289 02	.900039 02
55.75	.872081 02	.875731 02	.879381 02	.883031 02	.886681 02	.890331 02	.893981 02	.897631 02	.901281 02	.904931 02
56.00	.877073 02	.880723 02	.884373 02	.888023 02	.891673 02	.895323 02	.898973 02	.902623 02	.906273 02	.909923 02
56.25	.882065 02	.885715 02	.889365 02	.893015 02	.896665 02	.900315 02	.903965 02	.907615 02	.911265 02	.914915 02
56.50	.887057 02	.890707 02	.894357 02	.898007 02	.901657 02	.905307 02	.908957 02	.912607 02	.916257 02	.919907 02
56.75	.892049 02	.895699 02	.899349 02	.902999 02	.906649 02	.910299 02	.913949 02	.917599 02	.921249 02	.924899 02
57.00	.897041 02	.900691 02	.904341 02	.907991 02	.911641 02	.915291 02	.918941 02	.922591 02	.926241 02	.929891 02
57.25	.902033 02	.905683 02	.909333 02	.912983 02	.916633 02	.920283 02	.923933 02	.927583 02	.931233 02	.934883 02
57.50	.907025 02	.910675 02	.914325 02	.917975 02	.921625 02	.925275 02	.928925 02	.932575 02	.936225 02	.939875 02
57.75	.912017 02	.915667 02	.919317 02	.922967 02	.926617 02	.930267 02	.933917 02	.937567 02	.941217 02	.944867 02
58.00	.917009 02	.920659 02	.924309 02	.927959 02	.931609 02	.935259 02	.938909 02	.942559 02	.946209 02	.949859 02
58.25	.922001 02	.925651 02	.929301 02	.932951 02	.936601 02	.940251 02	.943901 02	.947551 02	.951201 02	.954851 02
58.50	.927003 02	.930653 02	.934303 02	.937953 02	.941603 02	.945253 02	.948903 02	.952553 02	.956203 02	.959853 02
58.75	.932005 02	.935655 02	.939305 02	.942955 02	.946605 02	.950255 02	.953905 02	.957555 02	.961205 02	.964855 02
59.00	.937007 02	.940657 02	.944307 02	.947957 02	.951607 02	.955257 02	.958907 02	.962557 02	.966207 02	.969857 02
59.25	.942009 02	.945659 02	.949309 02	.952959 02	.956609 02	.960259 02	.963909 02	.967559 02	.971209 02	.974859 02
59.50	.947001 02	.950651 02	.954301 02	.9						

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and p

Q	p	.99	.95	.90	.85	.80	.75	.70	.65	.60	.55	.50	.45	.40	.35	.30	.25	.20	.15	.10	.05	.01
62.5	.99556	.62511	.63273	.64203	.65154	.66241	.67356	.68496	.69752	.71024	.72304	.73584	.74864	.76144	.77424	.78704	.79984	.81264	.82544	.83824	.85104	
63.0	.99528	.63245	.64007	.64937	.65888	.66975	.68090	.69229	.70484	.71744	.73004	.74264	.75524	.76784	.78044	.79304	.80564	.81824	.83084	.84344	.85604	
63.5	.99501	.63218	.63980	.64910	.65861	.66948	.68063	.69202	.70457	.71717	.72977	.74237	.75497	.76757	.78017	.79277	.80537	.81797	.83057	.84317	.85577	
64.0	.99474	.63191	.63953	.64883	.65834	.66921	.68036	.69175	.70430	.71690	.72950	.74210	.75470	.76730	.77990	.79250	.80510	.81770	.83030	.84290	.85550	
64.5	.99447	.63164	.63926	.64856	.65807	.66894	.68009	.69148	.70403	.71663	.72923	.74183	.75443	.76703	.77963	.79223	.80483	.81743	.83003	.84263	.85523	
65.0	.99420	.63137	.63899	.64829	.65780	.66867	.67982	.69121	.70376	.71636	.72896	.74156	.75416	.76676	.77936	.79196	.80456	.81716	.82976	.84236	.85496	
65.5	.99393	.63110	.63872	.64802	.65753	.66840	.67955	.69094	.70349	.71609	.72869	.74129	.75389	.76649	.77909	.79169	.80429	.81689	.82949	.84209	.85469	
66.0	.99366	.63083	.63845	.64775	.65726	.66813	.67928	.69067	.70322	.71582	.72842	.74102	.75362	.76622	.77882	.79142	.80402	.81662	.82922	.84182	.85442	
66.5	.99339	.63056	.63818	.64748	.65699	.66786	.67901	.69040	.70295	.71555	.72815	.74075	.75335	.76595	.77855	.79115	.80375	.81635	.82895	.84155	.85415	
67.0	.99312	.63029	.63791	.64721	.65672	.66759	.67874	.69013	.70268	.71528	.72788	.74048	.75308	.76568	.77828	.79088	.80348	.81608	.82868	.84128	.85388	
67.5	.99285	.62999	.63761	.64691	.65642	.66729	.67844	.68983	.70238	.71498	.72758	.74018	.75278	.76538	.77798	.79058	.80318	.81578	.82838	.84098	.85358	
68.0	.99258	.62972	.63734	.64664	.65615	.66702	.67817	.68956	.70211	.71471	.72731	.73991	.75251	.76511	.77771	.79031	.80291	.81551	.82811	.84071	.85331	
68.5	.99231	.62945	.63707	.64637	.65588	.66675	.67790	.68929	.70184	.71444	.72704	.73964	.75224	.76484	.77744	.79004	.80264	.81524	.82784	.84044	.85304	
69.0	.99204	.62918	.63680	.64610	.65561	.66648	.67763	.68902	.70157	.71417	.72677	.73937	.75197	.76457	.77717	.78977	.80237	.81497	.82757	.84017	.85277	
69.5	.99177	.62891	.63653	.64583	.65534	.66621	.67736	.68875	.70130	.71390	.72650	.73910	.75170	.76430	.77690	.78950	.80210	.81470	.82730	.83990	.85250	
70.0	.99150	.62864	.63626	.64556	.65507	.66594	.67709	.68848	.70103	.71363	.72623	.73883	.75143	.76403	.77663	.78923	.80183	.81443	.82703	.83963	.85223	
70.5	.99123	.62837	.63599	.64529	.65480	.66567	.67682	.68821	.70076	.71336	.72596	.73856	.75116	.76376	.77636	.78896	.80156	.81416	.82676	.83936	.85196	
71.0	.99096	.62810	.63572	.64502	.65453	.66540	.67655	.68794	.70049	.71309	.72569	.73829	.75089	.76349	.77609	.78869	.80129	.81389	.82649	.83909	.85169	
71.5	.99069	.62783	.63545	.64475	.65426	.66513	.67628	.68767	.70022	.71282	.72542	.73802	.75062	.76322	.77582	.78842	.80102	.81362	.82622	.83882	.85142	
72.0	.99042	.62756	.63518	.64448	.65399	.66486	.67601	.68740	.70005	.71265	.72525	.73785	.75045	.76305	.77565	.78825	.80085	.81345	.82605	.83865	.85125	
72.5	.99015	.62729	.63491	.64421	.65372	.66459	.67574	.68713	.70008	.71268	.72528	.73788	.75048	.76308	.77568	.78828	.80088	.81348	.82608	.83868	.85128	
73.0	.98988	.62702	.63464	.64394	.65345	.66432	.67547	.68686	.70001	.71261	.72521	.73781	.75041	.76301	.77561	.78821	.80081	.81341	.82601	.83861	.85121	
73.5	.98961	.62675	.63437	.64367	.65318	.66405	.67520	.68659	.70004	.71264	.72524	.73784	.75044	.76304	.77564	.78824	.80084	.81344	.82604	.83864	.85124	
74.0	.98934	.62648	.63410	.64340	.65291	.66378	.67493	.68632	.70007	.71267	.72527	.73787	.75047	.76307	.77567	.78827	.80087	.81347	.82607	.83867	.85127	
74.5	.98907	.62621	.63383	.64313	.65264	.66351	.67466	.68605	.70012	.71272	.72532	.73792	.75052	.76312	.77572	.78832	.80092	.81352	.82612	.83872	.85132	
75.0	.98880	.62594	.63356	.64286	.65237	.66324	.67439	.68578	.70016	.71276	.72536	.73796	.75056	.76316	.77576	.78836	.80096	.81356	.82616	.83876	.85136	
75.5	.98853	.62567	.63329	.64259	.65210	.66297	.67412	.68551	.70019	.71279	.72539	.73799	.75059	.76319	.77579	.78839	.80099	.81359	.82619	.83879	.85139	
76.0	.98826	.62540	.63302	.64232	.65183	.66270	.67385	.68524	.70022	.71282	.72542	.73802	.75062	.76322	.77582	.78842	.80102	.81362	.82622	.83882	.85142	
76.5	.98799	.62513	.63275	.64205	.65156	.66243	.67358	.68497	.70026	.71286	.72546	.73806	.75066	.76326	.77586	.78846	.80106	.81366	.82626	.83886	.85146	
77.0	.98772	.62486	.63248	.64178	.65129	.66216	.67331	.68470	.70030	.71290	.72550	.73810	.75070	.76330	.77590	.78850	.80110	.81370	.82630	.83890	.85150	
77.5	.98745	.62459	.63221	.64151	.65102	.66189	.67304	.68443	.70040	.71300	.72560	.73820	.75080	.76340	.77600	.78860	.80120	.81380	.82640	.83900	.85160	
78.0	.98718	.62432	.63194	.64124	.65075	.66162	.67277	.68416	.70046	.71306	.72566	.73826	.75086	.76346	.77606	.78866	.80126	.81386	.82646	.83906	.85166	
78.5	.98691	.62405	.63167	.64097	.65048	.66135	.67250	.68389	.70050	.71310	.72570	.73830	.75090	.76350	.77610	.78870	.80130	.81390	.82650	.83910	.85170	
79.0	.98664	.62378	.63140	.64070	.65021	.66108	.67223	.68362	.70060	.71320	.72580	.73840	.75100	.76360	.77620	.78880	.80140	.81400	.82660	.83920	.85180	
79.5	.98637	.62351	.63113	.64043	.64994	.66081	.67196	.68335	.70070	.71330	.72590	.73850	.75110	.76370	.77630	.78890	.80150	.81410	.82670	.83930	.85190	
80.0	.98610	.62324	.63086	.64016	.64967	.66054	.67169	.68308	.70080	.71340	.72600	.73860	.75120	.76380	.77640	.78900	.80160	.81420	.82680	.83940	.85200	
80.5	.98583	.62297	.63059	.63989	.64940	.66027	.67142	.68281	.70090	.71350	.72610	.73870	.75130	.76390	.77650	.78910	.80170	.81430	.82690	.83950	.85210	
81.0	.98556	.62270	.63032	.63962	.64913	.66000	.67115	.68254	.70100	.71360	.72620	.73880	.75140	.76400	.77660	.78920	.80180	.81440	.82700	.83960	.85220	
81.5	.98529	.62243	.63005	.63935	.64886	.65973	.67088	.68227	.70130	.71390	.72650	.73910	.75170	.76430	.77690	.78950	.80210	.81470	.82730	.83990	.85250	
82.0	.98502	.62216	.62978	.63908	.64859	.65946	.67061	.68200	.70150	.71410	.72670	.73930	.75190	.76450	.77710	.78970	.80230	.81490	.82750	.84010	.85270	
82.5	.98475	.62189	.62951	.63881	.64832	.65919	.67034	.68173	.70180	.71440	.72700	.73960	.75220	.76480	.77740	.79000	.80260	.81520	.82780	.84040	.85300	
83.0	.98448	.62162	.62924	.63854	.64805	.65892	.67007	.68146	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	
83.5	.98421	.62135	.62897	.63827	.64778	.65865	.66980	.68119	.70230	.71490	.72750	.74010	.75270	.76530	.77790	.79050	.80310	.81570	.82830	.84090	.85350	
84.0	.98394	.62108	.62870	.63800	.64751	.65838	.66953	.68092	.70210	.71470	.72730	.74000	.75260	.76520	.77780	.79040	.80300	.81560	.82820	.84080	.85340	
84.5	.98367	.62081	.62843	.63773	.64724	.65811	.66926	.68065	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	
85.0	.98340	.62054	.62816	.63746	.64697	.65784	.66899	.68038	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	
85.5	.98313	.62027	.62789	.63719	.64670	.65757	.66872	.68011	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	
86.0	.98286	.62000	.62762	.63692	.64643	.65730	.66845	.67984	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	
86.5	.98259	.61973	.62735	.63665	.64616	.65703	.66818	.67957	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	
87.0	.98232	.61946	.62708	.63638	.64589	.65676	.66791	.67930	.70200	.71460	.72720	.73980	.75240	.76500	.77760	.79020	.80280	.81540	.82800	.84060	.85320	

[illegible][illegible]

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

[illegible]

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and v

1777	1778	1779	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	
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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

v	0.50000	0.55000	0.60000	0.65000	0.70000	0.75000	0.80000	0.85000	0.90000	0.95000	1.00000	1.25000	1.50000	1.75000	2.00000
122.5	193246	193272	193298	193324	193350	193376	193402	193428	193454	193480	193506	193532	193558	193584	193610
123.0	193791	193817	193843	193869	193895	193921	193947	193973	194000	194026	194052	194078	194104	194130	194156
123.5	194336	194362	194388	194414	194440	194466	194492	194518	194544	194570	194596	194622	194648	194674	194700
124.0	194841	194867	194893	194919	194945	194971	195000	195026	195052	195078	195104	195130	195156	195182	195208
124.5	195311	195337	195363	195389	195415	195441	195467	195493	195519	195545	195571	195597	195623	195649	195675
125.0	195758	195784	195810	195836	195862	195888	195914	195940	195966	195992	196018	196044	196070	196096	196122
125.5	196250	196276	196302	196328	196354	196380	196406	196432	196458	196484	196510	196536	196562	196588	196614
126.0	196739	196765	196791	196817	196843	196869	196895	196921	196947	196973	196999	197025	197051	197077	197103
126.5	197212	197238	197264	197290	197316	197342	197368	197394	197420	197446	197472	197498	197524	197550	197576
127.0	197681	197707	197733	197759	197785	197811	197837	197863	197889	197915	197941	197967	197993	198019	198045
127.5	198155	198181	198207	198233	198259	198285	198311	198337	198363	198389	198415	198441	198467	198493	198519
128.0	198629	198655	198681	198707	198733	198759	198785	198811	198837	198863	198889	198915	198941	198967	198993
128.5	199103	199129	199155	199181	199207	199233	199259	199285	199311	199337	199363	199389	199415	199441	199467
129.0	199577	199603	199629	199655	199681	199707	199733	199759	199785	199811	199837	199863	199889	199915	199941
129.5	199967	199993	200019	200045	200071	200097	200123	200149	200175	200201	200227	200253	200279	200305	200331
130.0	200357	200383	200409	200435	200461	200487	200513	200539	200565	200591	200617	200643	200669	200695	200721
130.5	200747	200773	200799	200825	200851	200877	200903	200929	200955	200981	201007	201033	201059	201085	201111
131.0	201137	201163	201189	201215	201241	201267	201293	201319	201345	201371	201397	201423	201449	201475	201501
131.5	201527	201553	201579	201605	201631	201657	201683	201709	201735	201761	201787	201813	201839	201865	201891
132.0	201917	201943	201969	201995	202021	202047	202073	202099	202125	202151	202177	202203	202229	202255	202281
132.5	202307	202333	202359	202385	202411	202437	202463	202489	202515	202541	202567	202593	202619	202645	202671
133.0	202697	202723	202749	202775	202801	202827	202853	202879	202905	202931	202957	202983	203009	203035	203061
133.5	203087	203113	203139	203165	203191	203217	203243	203269	203295	203321	203347	203373	203399	203425	203451
134.0	203477	203503	203529	203555	203581	203607	203633	203659	203685	203711	203737	203763	203789	203815	203841
134.5	203867	203893	203919	203945	203971	203997	204023	204049	204075	204101	204127	204153	204179	204205	204231
135.0	204257	204283	204309	204335	204361	204387	204413	204439	204465	204491	204517	204543	204569	204595	204621
135.5	204647	204673	204699	204725	204751	204777	204803	204829	204855	204881	204907	204933	204959	204985	205011
136.0	205037	205063	205089	205115	205141	205167	205193	205219	205245	205271	205297	205323	205349	205375	205401
136.5	205427	205453	205479	205505	205531	205557	205583	205609	205635	205661	205687	205713	205739	205765	205791
137.0	205817	205843	205869	205895	205921	205947	205973	206000	206026	206052	206078	206104	206130	206156	206182
137.5	206208	206234	206260	206286	206312	206338	206364	206390	206416	206442	206468	206494	206520	206546	206572
138.0	206598	206624	206650	206676	206702	206728	206754	206780	206806	206832	206858	206884	206910	206936	206962
138.5	206988	207014	207040	207066	207092	207118	207144	207170	207196	207222	207248	207274	207300	207326	207352
139.0	207378	207404	207430	207456	207482	207508	207534	207560	207586	207612	207638	207664	207690	207716	207742
139.5	207768	207794	207820	207846	207872	207898	207924	207950	207976	208002	208028	208054	208080	208106	208132
140.0	208158	208184	208210	208236	208262	208288	208314	208340	208366	208392	208418	208444	208470	208496	208522
140.5	208548	208574	208600	208626	208652	208678	208704	208730	208756	208782	208808	208834	208860	208886	208912
141.0	208938	208964	208990	209016	209042	209068	209094	209120	209146	209172	209198	209224	209250	209276	209302
141.5	209328	209354	209380	209406	209432	209458	209484	209510	209536	209562	209588	209614	209640	209666	209692
142.0	209718	209744	209770	209796	209822	209848	209874	209900	209926	209952	209978	210004	210030	210056	210082
142.5	210108	210134	210160	210186	210212	210238	210264	210290	210316	210342	210368	210394	210420	210446	210472
143.0	210498	210524	210550	210576	210602	210628	210654	210680	210706	210732	210758	210784	210810	210836	210862
143.5	210888	210914	210940	210966	210992	211018	211044	211070	211096	211122	211148	211174	211200	211226	211252
144.0	211278	211304	211330	211356	211382	211408	211434	211460	211486	211512	211538	211564	211590	211616	211642
144.5	211668	211694	211720	211746	211772	211798	211824	211850	211876	211902	211928	211954	211980	212006	212032
145.0	212058	212084	212110	212136	212162	212188	212214	212240	212266	212292	212318	212344	212370	212396	212422
145.5	212448	212474	212500	212526	212552	212578	212604	212630	212656	212682	212708	212734	212760	212786	212812
146.0	212838	212864	212890	212916	212942	212968	212994	213020	213046	213072	213098	213124	213150	213176	213202
146.5	213228	213254	213280	213306	213332	213358	213384	213410	213436	213462	213488	213514	213540	213566	213592
147.0	213618	213644	213670	213696	213722	213748	213774	213800	213826	213852	213878	213904	213930	213956	213982
147.5	214008	214034	214060	214086	214112	214138	214164	214190	214216	214242	214268	214294	214320	214346	214372
148.0	214398	214424	214450	214476	214502	214528	214554	214580	214606	214632	214658	214684	214710	214736	214762
148.5	214788	214814	214840	214866	214892	214918	214944	214970	214996	215022	215048	215074	215100	215126	215152
149.0	215178	215204	215230	215256	215282	215308	215334	215360	215386	215412	215438	215464	215490	215516	215542
149.5	215568	215594	215620	215646	215672	215698	215724	215750	215776	215802	215828	215854	215880	215906	215932
150.0	215958	215984	216010	216036	216062	216088	216114	216140	216166	216192	216218	216244	216270	216296	216322
150.5	216348	216374	216400	216426	216452	216478	216504	216530	216556	216582	216608	216634	216660	216686	216712
151.0	216738	216764	216790	216816	216842	216868	216894	216920	216946	216972	216998	217024	217050	217076	217102
151.5	217128	217154	217180	217206	217232	217258	217284	217310	217336	217362	217388	217414	217440	217466	217492
152.0	217518	217544	217570	217596	217622	217648	217674	217700	217726	217752	217778	217804	217830	217856	217882
152.5	217908	217934	217960	217986	218012	218038	218064	218090	218116	218142	218168	218194	218220	218246	218272
153.0	218298	218324	218350	218376	218402	218428	218454	218480	218506	218532	218558	218584	218610	218636	218662
153.5	218688	218714	218740	218766	218792	218818	218844	218870	218896	218922	218948	218974	219000	219026	219052
154.0	219078	219104	219130	219156	219182	219208	219234	219260	219286	219312	219338	219364	219390	219416	219442
154.5	219468	219494	219520	219546	219572	219598	219624	219650	219676	219702	219728	219754	219780	219806	219832
155.0	219858	219884	219910	219936	219962	219988	220014	220040	220066	220092	220118	220144	220170	220196	220222
155.5	220248	220274	220300	220326	220352	220378	220404	220430	220456	220482	220508				

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

22304	22305	22306	22307	22308	22309	22310	22311	22312	22313	22314	22315	22316	22317	22318	22319	22320	22321	22322	22323	22324	22325	22326	22327	22328	22329	22330	22331	22332	22333	22334	22335	22336	22337	22338	22339	22340	22341	22342	22343	22344	22345	22346	22347	22348	22349	22350	22351	22352	22353	22354	22355	22356	22357	22358	22359	22360	22361	22362	22363	22364	22365	22366	22367	22368	22369	22370	22371	22372	22373	22374	22375	22376	22377	22378	22379	22380	22381	22382	22383	22384	22385	22386	22387	22388	22389	22390	22391	22392	22393	22394	22395	22396	22397	22398	22399	22400	22401	22402	22403	22404	22405	22406	22407	22408	22409	22410	22411	22412	22413	22414	22415	22416	22417	22418	22419	22420	22421	22422	22423	22424	22425	22426	22427	22428	22429	22430	22431	22432	22433	22434	22435	22436	22437	22438	22439	22440	22441	22442	22443	22444	22445	22446	22447	22448	22449	22450	22451	22452	22453	22454	22455	22456	22457	22458	22459	22460	22461	22462	22463	22464	22465	22466	22467	22468	22469	22470	22471	22472	22473	22474	22475	22476	22477	22478	22479	22480	22481	22482	22483	22484	22485	22486	22487	22488	22489	22490	22491	22492	22493	22494	22495	22496	22497	22498	22499	22500	22501	22502	22503	22504	22505	22506	22507	22508	22509	22510	22511	22512	22513	22514	22515	22516	22517	22518	22519	22520	22521	22522	22523	22524	22525	22526	22527	22528	22529	22530	22531	22532	22533	22534	22535	22536	22537	22538	22539	22540	22541	22542	22543	22544	22545	22546	22547	22548	22549	22550	22551	22552	22553	22554	22555	22556	22557	22558	22559	22560	22561	22562	22563	22564	22565	22566	22567	22568	22569	22570	22571	22572	22573	22574	22575	22576	22577	22578	22579	22580	22581	22582	22583	22584	22585	22586	22587	22588	22589	22590	22591	22592	22593	22594	22595	22596	22597	22598	22599	22600	22601	22602	22603	22604	22605	22606	22607	22608	22609	22610	22611	22612	22613	22614	22615	22616	22617	22618	22619	22620	22621	22622	22623	22624	22625	22626	22627	22628	22629	22630	22631	22632	22633	22634	22635	22636	22637	22638	22639	22640	22641	22642	22643	22644	22645	22646	22647	22648	22649	22650	22651	22652	22653	22654	22655	22656	22657	22658	22659	22660	22661	22662	22663	22664	22665	22666	22667	22668	22669	22670	22671	22672	22673	22674	22675	22676	22677	22678	22679	22680	22681	22682	22683	22684	22685	22686	22687	22688	22689	22690	22691	22692	22693	22694	22695	22696	22697	22698	22699	22700	22701	22702	22703	22704	22705	22706	22707	22708	22709	22710	22711	22712
22354	22355	22356	22357	22358	22359	22360	22361	22362	22363	22364	22365	22366	22367	22368	22369	22370	22371	22372	22373	22374	22375	22376	22377	22378	22379	22380	22381	22382	22383	22384	22385	22386	22387	22388	22389	22390	22391	22392	22393	22394	22395	22396	22397	22398	22399	22400	22401	22402	22403	22404	22405	22406	22407	22408	22409	22410	22411	22412	22413	22414	22415	22416	22417	22418	22419	22420	22421	22422	22423	22424	22425	22426	22427	22428	22429	22430	22431	22432	22433	22434	22435	22436	22437	22438	22439	22440	22441	22442	22443	22444	22445	22446	22447	22448	22449	22450	22451	22452	22453	22454	22455	22456	22457	22458	22459	22460	22461	22462	22463	22464	22465	22466	22467	22468	22469	22470	22471	22472	22473	22474	22475	22476	22477	22478	22479	22480	22481	22482	22483	22484	22485	22486	22487	22488	22489	22490	22491	22492	22493	22494	22495	22496	22497	22498	22499	22500	22501	22502	22503	22504	22505	22506	22507	22508	22509	22510	22511	22512	22513	22514	22515	22516	22517	22518	22519	22520	22521	22522	22523	22524	22525	22526	22527	22528	22529	22530	22531	22532	22533	22534	22535	22536	22537	22538	22539	22540	22541	22542	22543	22544	22545	22546	22547	22548	22549	22550	22551	22552	22553	22554	22555	22556	22557	22558	22559	22560	22561	22562	22563	22564	22565	22566	22567	22568	22569	22570	22571	22572	22573	22574	22575	22576	22577	22578	22579	22580	22581	22582	22583	22584	22585	22586	22587	22588	22589	22590	22591	22592	22593	22594	22595	22596	22597	22598	22599	22600	22601	22602	22603	22604	22605	22606	22607	22608	22609	22610	22611	22612	22613	22614	22615	22616	22617	22618	22619	22620	22621	22622	22623	22624	22625	22626	22627	22628	22629	22630	22631	22632	22633	22634	22635	22636	22637	22638	22639	22640	22641	22642	22643	22644	22645	22646	22647	22648	22649	22650	22651	22652	22653	22654	22655	22656	22657	22658	22659	22660	22661	22662	22663	22664	22665	22666	22667	22668	22669	22670	22671	22672	22673	22674	22675	22676	22677	22678	22679	22680	22681	22682	22683	22684	22685	22686	22687	22688	22689	22690	22691	22692	22693	22694	22695	22696	22697	22698	22699	22700	22701	22702	22703	22704	22705	22706	22707	22708	22709	22710	22711	22712																																																		
22354	22355	22356	22357	22358	22359	22360	22361	22362	22363	22364	22365	22366	22367	22368	22369	22370	22371	22372	22373	22374	22375	22376	22377	22378	22379	22380	22381	22382	22383	22384	22385	22386	22387	22388	22389	22390	22391	22392	22393	22394	22395	22396	22397	22398	22399	22400	22401	22402	22403	22404	22405	22406	22407	22408	22409	22410	22411	22412	22413	22414	22415	22416	22417	22418	22419	22420	22421	22422	22423	22424	22425	22426	22427	22428	22429	22430	22431	22432	22433	22434	22435	22436	22437	22438	22439	22440	22441	22442	22443	22444	22445	22446	22447	22448	22449	22450	22451	22452	22453	22454	22455	22456	22457	22458	22459	22460	22461	22462	22463	22464	22465	22466	22467	22468	22469	22470	22471	22472	22473	22474	22475	22476	22477	22478	22479	22480	22481	22482	22483	22484	22485	22486	22487	22488	22489	22490	22491	22492	22493	22494	22495	22496	22497	22498	22499	22500	22501	22502	22503	22504	22505	22506	22507	22508	22509	22510	22511	22512	22513	22514	22515	22516	22517	22518	22519	22520	22521	22522	22523	22524	22525	22526	22527	22528	22529	22530	22531	22532	22533	22534	22535	22536	22537	22538	22539	22540	22541	22542	22543	22544	22545	22546	22547	22548	22549	22550	22551	22552	22553	22554	22555	22556	22557	22558	22559	22560	22561	22562	22563	22564	22565	22566	22567	22568	22569	22570	22571	22572	22573	22574	22575	22576	22577	22578	22579	22580	22581	22582	22583	22584	22585	22586	22587	22588	22589	22590	22591	22592	22593	22594	22595	22596	22597	22598	22599	22600	22601	22602	22603	22604	22605	22606	22607	22608	22609	22610	22611	22612	22613	22614	22615	22616	22617	22618	22619	22620	22621	22622	22623	22624	22625	22626	22627	22628	22629	22630	22631	22632	22633	22634	22635	22636	22637	22638	22639	22640	22641	22642	22643	22644	22645	22646	22647	22648	22649	22650	22651	22652	22653	22654	22655	22656	22657	22658	22659	22660	22661	22662	22663	22664	22665	22666	22667	22668	22669	22670	22671	22672	22673	22674	22675	22676	22677	22678	22679	22680	22681	22682	22683	22684	22685	22686	22687	22688	22689	22690	22691	22692	22693	22694	22695	22696	22697	22698	22699	22700	22701	22702	22703	22704	22705	22706	22707	22708	22709	22710	22711	22712																																																		
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Propagator Poles of the χ^2 Distribution

25113	25114	25115	25116	25117	25118	25119	25120	25121	25122	25123	25124	25125	25126	25127	25128	25129	25130	25131	25132	25133	25134	25135	25136	25137	25138	25139	25140	25141	25142	25143	25144	25145	25146	25147	25148	25149	25150	25151	25152	25153	25154	25155	25156	25157	25158	25159	25160	25161	25162	25163	25164	25165	25166	25167	25168	25169	25170	25171	25172	25173	25174	25175	25176	25177	25178	25179	25180	25181	25182	25183	25184	25185	25186	25187	25188	25189	25190	25191	25192	25193	25194	25195	25196	25197	25198	25199	25200	25201	25202	25203	25204	25205	25206	25207	25208	25209	25210	25211	25212	25213	25214	25215	25216	25217	25218	25219	25220	25221	25222	25223	25224	25225	25226	25227	25228	25229	25230	25231	25232	25233	25234	25235	25236	25237	25238	25239	25240	25241	25242	25243	25244	25245	25246	25247	25248	25249	25250	25251	25252	25253	25254	25255	25256	25257	25258	25259	25260	25261	25262	25263	25264	25265	25266	25267	25268	25269	25270	25271	25272	25273	25274	25275	25276	25277	25278	25279	25280	25281	25282	25283	25284	25285	25286	25287	25288	25289	25290	25291	25292	25293	25294	25295	25296	25297	25298	25299	25300	25301	25302	25303	25304	25305	25306	25307	25308	25309	25310	25311	25312	25313	25314	25315	25316	25317	25318	25319	25320	25321	25322	25323	25324	25325	25326	25327	25328	25329	25330	25331	25332	25333	25334	25335	25336	25337	25338	25339	25340	25341	25342	25343	25344	25345	25346	25347	25348	25349	25350	25351	25352	25353	25354	25355	25356	25357	25358	25359	25360	25361	25362	25363	25364	25365	25366	25367	25368	25369	25370	25371	25372	25373	25374	25375	25376	25377	25378	25379	25380	25381	25382	25383	25384	25385	25386	25387	25388	25389	25390	25391	25392	25393	25394	25395	25396	25397	25398	25399	25400	25401	25402	25403	25404	25405	25406	25407	25408	25409	25410	25411	25412	25413	25414	25415	25416	25417	25418	25419	25420	25421	25422	25423	25424	25425	25426	25427	25428	25429	25430	25431	25432	25433	25434	25435	25436	25437	25438	25439	25440	25441	25442	25443	25444	25445	25446	25447	25448	25449	25450	25451	25452	25453	25454	25455	25456	25457	25458	25459	25460	25461	25462	25463	25464	25465	25466	25467	25468	25469	25470	25471	25472	25473	25474	25475	25476	25477	25478	25479	25480	25481	25482	25483	25484	25485	25486	25487	25488	25489	25490	25491	25492	25493	25494	25495	25496	25497	25498	25499	25500	25501	25502	25503	25504	25505	25506	25507	25508	25509	25510	25511	25512	25513	25514	25515	25516	25517	25518	25519	25520	25521																																																																						
25522	25523	25524	25525	25526	25527	25528	25529	25530	25531	25532	25533	25534	25535	25536	25537	25538	25539	25540	25541	25542	25543	25544	25545	25546	25547	25548	25549	25550	25551	25552	25553	25554	25555	25556	25557	25558	25559	25560	25561	25562	25563	25564	25565	25566	25567	25568	25569	25570	25571	25572	25573	25574	25575	25576	25577	25578	25579	25580	25581	25582	25583	25584	25585	25586	25587	25588	25589	25590	25591	25592	25593	25594	25595	25596	25597	25598	25599	25600	25601	25602	25603	25604	25605	25606	25607	25608	25609	25610	25611	25612	25613	25614	25615	25616	25617	25618	25619	25620	25621	25622	25623	25624	25625	25626	25627	25628	25629	25630	25631	25632	25633	25634	25635	25636	25637	25638	25639	25640	25641	25642	25643	25644	25645	25646	25647	25648	25649	25650	25651	25652	25653	25654	25655	25656	25657	25658	25659	25660	25661	25662	25663	25664	25665	25666	25667	25668	25669	25670	25671	25672	25673	25674	25675	25676	25677	25678	25679	25680	25681	25682	25683	25684	25685	25686	25687	25688	25689	25690	25691	25692	25693	25694	25695	25696	25697	25698	25699	25700	25701	25702	25703	25704	25705	25706	25707	25708	25709	25710	25711	25712	25713	25714	25715	25716	25717	25718	25719	25720	25721	25722	25723	25724	25725	25726	25727	25728	25729	25730	25731	25732	25733	25734	25735	25736	25737	25738	25739	25740	25741	25742	25743	25744	25745	25746	25747	25748	25749	25750	25751	25752	25753	25754	25755	25756	25757	25758	25759	25760	25761	25762	25763	25764	25765	25766	25767	25768	25769	25770	25771	25772	25773	25774	25775	25776	25777	25778	25779	25780	25781	25782	25783	25784	25785	25786	25787	25788	25789	25790	25791	25792	25793	25794	25795	25796	25797	25798	25799	25800	25801	25802	25803	25804	25805	25806	25807	25808	25809	25810	25811	25812	25813	25814	25815	25816	25817	25818	25819	25820	25821	25822	25823	25824	25825	25826	25827	25828	25829	25830	25831	25832	25833	25834	25835	25836	25837	25838	25839	25840	25841	25842	25843	25844	25845	25846	25847	25848	25849	25850	25851	25852	25853	25854	25855	25856	25857	25858	25859	25860	25861	25862	25863	25864	25865	25866	25867	25868	25869	25870	25871	25872	25873	25874	25875	25876	25877	25878	25879	25880	25881	25882	25883	25884	25885	25886	25887	25888	25889	25890	25891	25892	25893	25894	25895	25896	25897	25898	25899	25900	25901	25902	25903	25904	25905	25906	25907	25908	25909	25910	25911	25912	25913	25914	25915	25916	25917	25918	25919	25920	25921	25922	25923	25924	25925	25926	25927	25928	25929	25930	25931	25932	25933	25934	25935	25936	25937	25938	25939	25940	25941	25942	25943	25944	25945	25946	25947	25948	25949	25950	25951	25952	25953	25954	25955	25956	25957	25958	25959	25960	25961	25962	25963	25964	25965	25966	25967	25968	25969	25970	25971	25972	25973	25974	25975	25976	25977	25978	25979	25980	25981	25982	25983	25984	25985	25986	25987	25988	25989	25990	25991	25992	25993	25994	25995	25996	25997	25998	25999	26000
26001	26002	26003	26004	26005	26006	26007	26008	26009	26010	26011	26012	26013	26014	26015	26016	26017	26018	26019	26020	26021	26022	26023	26024	26025	26026	26027	26028	26029	26030	26031	26032	26033	26034	26035	26036	26037	26038	26039	26040	26041	26042	26043	26044	26045	26046	26047	26048	26049	26050	26051	26052	26053	26054	26055	26056	26057	26058	26059	26060	26061	26062	26063	26064	26065	26066	26067	26068	26069	26070	26071	26072	26073	26074	26075	26076	26077	26078	26079	26080	26081	26082	26083	26084	26085	26086	26087	26088	26089	26090	26091	26092	26093	26094	26095	26096	26097	26098	26099	26100	26101	26102	26103	26104	26105	26106	26107	26108	26109	26110	26111	26112	26113	26114	26115	26116	26117	26118	26119	26120	26121	26122	26123	26124	26125	26126	26127	26128	26129	26130	26131	26132	26133	26134	26135	26136	26137	26138	26139	26140	26141	26142	26143	26144	26145	26146	26147	26148	26149	26150	26151	26152	26153	26154	26155	26156	26157	26158	26159	26160	26161	26162	26163	26164	26165	26166	26167	26168	26169	26170	26171	26172	26173	26174	26175	26176	26177	26178	26179	26180	26181	26182	26183	26184	26185	26186	26187	26188	26189	26190	26191	26192	26193	26194	26195	26196	26197	26198	26199	26200	26201	26202	26203	26204	26205	26206	26207	26208	26209	26210	26211	26212	26213	26214	26215	26216	26217	26218	26219	26220	26221	26222	26223	26224	26225	26226	26227	26228	26229	26230	26231	26232	26233	26234	26235	26236	26237	26238	26239	26240	26241	26242	26243	26244	26245	26246	26247	26248	26249	26250	26251	26252	26253	26254	26255	26256	26257	26258	26259	26260	26261	26262	26263	26264	26265	26266	26267	26268	26269	26270	26271	26272	26273	26274	26275	26276	26277	26278	26279	26280	26281	26282	26283	26284	26285	26286	26287	26288	26289	26290	26291	26292	26293	26294	26295	26296	26297	26298	26299	26300	26301	26302	26303	26304	26305	26306	26307	26308	26309	26310	26311	26312	26313	26314	26315	26316	26317	26318	26319	26320	26321	26322	26323	26324	26325	26326	26327	26328	26329	26330	26331	26332	26333	26334	26335	26336	26337	26338	26339	26340	26341	26342	26343	26344	26345	26346	26347	26348	26349																																																																																																																																		

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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and r

Q	r	0.00	0.01	0.02	0.05	0.10	0.20	0.50	1.00
20.0	0.00	12.017	12.020	12.023	12.027	12.031	12.036	12.042	12.048
20.0	0.01	12.018	12.021	12.024	12.028	12.032	12.037	12.043	12.049
20.0	0.02	12.019	12.022	12.025	12.029	12.033	12.038	12.044	12.050
20.0	0.05	12.021	12.024	12.027	12.031	12.035	12.040	12.046	12.052
20.0	0.10	12.023	12.026	12.029	12.033	12.037	12.042	12.048	12.054
20.0	0.20	12.027	12.030	12.033	12.037	12.041	12.046	12.052	12.058
20.0	0.50	12.036	12.039	12.042	12.046	12.050	12.055	12.061	12.067
20.0	1.00	12.048	12.051	12.054	12.058	12.062	12.067	12.073	12.079
20.0	2.00	12.067	12.070	12.073	12.077	12.081	12.086	12.092	12.098
20.0	5.00	12.104	12.107	12.110	12.114	12.118	12.123	12.129	12.135
20.0	10.00	12.140	12.143	12.146	12.150	12.154	12.159	12.165	12.171
20.0	20.00	12.178	12.181	12.184	12.188	12.192	12.197	12.203	12.209
20.0	50.00	12.226	12.229	12.232	12.236	12.240	12.245	12.251	12.257
20.0	100.00	12.274	12.277	12.280	12.284	12.288	12.293	12.299	12.305
20.0	200.00	12.322	12.325	12.328	12.332	12.336	12.341	12.347	12.353
20.0	500.00	12.370	12.373	12.376	12.380	12.384	12.389	12.395	12.401
20.0	1000.00	12.418	12.421	12.424	12.428	12.432	12.437	12.443	12.449
20.0	2000.00	12.466	12.469	12.472	12.476	12.480	12.485	12.491	12.497
20.0	5000.00	12.514	12.517	12.520	12.524	12.528	12.533	12.539	12.545
20.0	10000.00	12.562	12.565	12.568	12.572	12.576	12.581	12.587	12.593
20.0	20000.00	12.610	12.613	12.616	12.620	12.624	12.629	12.635	12.641
20.0	50000.00	12.658	12.661	12.664	12.668	12.672	12.677	12.683	12.689
20.0	100000.00	12.706	12.709	12.712	12.716	12.720	12.725	12.731	12.737
20.0	200000.00	12.754	12.757	12.760	12.764	12.768	12.773	12.779	12.785
20.0	500000.00	12.802	12.805	12.808	12.812	12.816	12.821	12.827	12.833
20.0	1000000.00	12.850	12.853	12.856	12.860	12.864	12.869	12.875	12.881
20.0	2000000.00	12.900	12.903	12.906	12.910	12.914	12.919	12.925	12.931
20.0	5000000.00	12.948	12.951	12.954	12.958	12.962	12.967	12.973	12.979
20.0	10000000.00	12.996	12.999	13.002	13.006	13.010	13.015	13.021	13.027
20.0	20000000.00	13.044	13.047	13.050	13.054	13.058	13.063	13.069	13.075
20.0	50000000.00	13.092	13.095	13.098	13.102	13.106	13.111	13.117	13.123
20.0	100000000.00	13.140	13.143	13.146	13.150	13.154	13.159	13.165	13.171
20.0	200000000.00	13.188	13.191	13.194	13.198	13.202	13.207	13.213	13.219
20.0	500000000.00	13.236	13.239	13.242	13.246	13.250	13.255	13.261	13.267
20.0	1000000000.00	13.284	13.287	13.290	13.294	13.298	13.303	13.309	13.315
20.0	2000000000.00	13.332	13.335	13.338	13.342	13.346	13.351	13.357	13.363
20.0	5000000000.00	13.380	13.383	13.386	13.390	13.394	13.399	13.405	13.411
20.0	10000000000.00	13.428	13.431	13.434	13.438	13.442	13.447	13.453	13.459
20.0	20000000000.00	13.476	13.479	13.482	13.486	13.490	13.495	13.501	13.507
20.0	50000000000.00	13.524	13.527	13.530	13.534	13.538	13.543	13.549	13.555
20.0	100000000000.00	13.572	13.575	13.578	13.582	13.586	13.591	13.597	13.603
20.0	200000000000.00	13.620	13.623	13.626	13.630	13.634	13.639	13.645	13.651
20.0	500000000000.00	13.668	13.671	13.674	13.678	13.682	13.687	13.693	13.699
20.0	1000000000000.00	13.716	13.719	13.722	13.726	13.730	13.735	13.741	13.747
20.0	2000000000000.00	13.764	13.767	13.770	13.774	13.778	13.783	13.789	13.795
20.0	5000000000000.00	13.812	13.815	13.818	13.822	13.826	13.831	13.837	13.843
20.0	10000000000000.00	13.860	13.863	13.866	13.870	13.874	13.879	13.885	13.891
20.0	20000000000000.00	13.908	13.911	13.914	13.918	13.922	13.927	13.933	13.939
20.0	50000000000000.00	13.956	13.959	13.962	13.966	13.970	13.975	13.981	13.987
20.0	100000000000000.00	13.999	14.002	14.005	14.009	14.013	14.018	14.024	14.030
20.0	200000000000000.00	14.047	14.050	14.053	14.057	14.061	14.066	14.072	14.078
20.0	500000000000000.00	14.095	14.098	14.101	14.105	14.109	14.114	14.120	14.126
20.0	1000000000000000.00	14.143	14.146	14.149	14.153	14.157	14.162	14.168	14.174
20.0	2000000000000000.00	14.191	14.194	14.197	14.201	14.205	14.210	14.216	14.222
20.0	5000000000000000.00	14.239	14.242	14.245	14.249	14.253	14.258	14.264	14.270
20.0	10000000000000000.00	14.287	14.290	14.293	14.297	14.301	14.306	14.312	14.318
20.0	20000000000000000.00	14.335	14.338	14.341	14.345	14.349	14.354	14.360	14.366
20.0	50000000000000000.00	14.383	14.386	14.389	14.393	14.397	14.402	14.408	14.414
20.0	100000000000000000.00	14.431	14.434	14.437	14.441	14.445	14.450	14.456	14.462
20.0	200000000000000000.00	14.479	14.482	14.485	14.489	14.493	14.498	14.504	14.510
20.0	500000000000000000.00	14.527	14.530	14.533	14.537	14.541	14.546	14.552	14.558
20.0	1000000000000000000.00	14.575	14.578	14.581	14.585	14.589	14.594	14.599	14.605
20.0	2000000000000000000.00	14.622	14.625	14.628	14.632	14.636	14.641	14.647	14.653
20.0	5000000000000000000.00	14.670	14.673	14.676	14.680	14.684	14.689	14.695	14.701
20.0	10000000000000000000.00	14.718	14.721	14.724	14.728	14.732	14.737	14.743	14.749
20.0	20000000000000000000.00	14.766	14.769	14.772	14.776	14.780	14.785	14.791	14.797
20.0	50000000000000000000.00	14.814	14.817	14.820	14.824	14.828	14.833	14.839	14.845
20.0	100000000000000000000.00	14.862	14.865	14.868	14.872	14.876	14.881	14.887	14.893
20.0	200000000000000000000.00	14.910	14.913	14.916	14.920	14.924	14.929	14.935	14.941
20.0	500000000000000000000.00	14.958	14.961	14.964	14.968	14.972	14.977	14.983	14.989
20.0	1000000000000000000000.00	15.006	15.009	15.012	15.016	15.020	15.025	15.031	15.037
20.0	2000000000000000000000.00	15.054	15.057	15.060	15.064	15.068	15.073	15.079	15.085
20.0	5000000000000000000000.00	15.102	15.105	15.108	15.112	15.116	15.121	15.127	15.133
20.0	10000000000000000000000.00	15.150	15.153	15.156	15.160	15.164	15.169	15.175	15.181
20.0	20000000000000000000000.00	15.198	15.201	15.204	15.208	15.212	15.217	15.223	15.229
20.0	50000000000000000000000.00	15.246	15.249	15.252	15.256	15.260	15.265	15.271	15.277
20.0	100000000000000000000000.00	15.294	15.297	15.300	15.304	15.308	15.313	15.319	15.325
20.0	200000000000000000000000.00	15.342	15.345	15.348	15.352	15.356	15.361	15.367	15.373
20.0	500000000000000000000000.00	15.390	15.393	15.396	15.400	15.404	15.409	15.415	15.421
20.0	1000000000000000000000000.00	15.438	15.441	15.444	15.448	15.452	15.457	15.463	15.469
20.0	2000000000000000000000000.00	15.486	15.489	15.492	15.496	15.500	15.505	15.511	15.517
20.0	5000000000000000000000000.00	15.534	15.537	15.540	15.544	15.548	15.553	15.559	15.565
20.0	10000000000000000000000000.00	15.582	15.585	15.588	15.592	15.596	15.601	15.607	15.613
20.0	20000000000000000000000000.00	15.630	15.633	15.636	15.640	15.644	15.649	15.655	15.661
20.0	50000000000000000000000000.00	15.678	15.681	15.684	15.688	15.692	15.697	15.703	15.709
20.0	100000000000000000000000000.00	15.726	15.729	15.732	15.736	15.740	15.745	15.751	15.757
20.0	200000000000000000000000000.00	15.774	15.777	15.780	15.784	15.788	15.793	15.799	15.805
20.0	500000000000000000000000000.00	15.822	15.825	15.828	15.832	15.836	15.841	15.847	15.853
20.0	1000000000000000000000000000.00	15.870	15.873	15.876	15.880	15.884	15.889	15.895	15.901
20.0	2000000000000000000000000000.00	15.918	15.921	15.924	15.928	15.932	15.937	15.943	15.949
20.0	5000000000000000000000000000.00	15.966	15.969	15.972	15.976	15.980	15.985	15.991	15.997
20.0	10000000000000000000000000000.00	16.014	16.017	16.020	16.024	16.028	16.033	16.039	16.045
20.0	20000000000000000000000000000.00	16.062	16.065	16.068	16.072	16.076	16.081	16.087	16.093
20.0	50000000000000000000000000000.00	16.110	16.113	16.116	16.120	16.124	16.129	16.135	16.141
20.0	100000000000000000000000000000.00	16.158	16.161	16.164	16.168	16.172	16.177	16.183	16.189
20.0	200000000000000000000000000000.00	16.206	16.209	16.212	16.216	16.220	16.225	16.231	16.237
20.0	500000000000000000000000000000.00	16.254	16.257	16.260	16.264	16.268	16.273	16.279	16.285
20.0	1000000000000000000000000000000.00	16.302	16.305	16.308	16.312	16.316			

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of ν and p

[illegible]

For the purpose of the present study, the following hypotheses were formulated:

[illegible]

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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.05000	.04000	.03000	.02500	.02000	.01500	.012500	.01000
362.5	.437697 03	.439866 03	.412781 03	.417142 03	.419920 03	.423383 03	.425515 03	.428063 03
363.0	.438427 03	.441519 03	.413315 03	.417670 03	.420458 03	.423923 03	.426056 03	.428607 03
363.5	.438458 03	.441551 03	.413348 03	.417704 03	.420496 03	.423961 03	.426094 03	.428645 03
364.0	.438489 03	.441584 03	.413381 03	.417737 03	.420534 03	.424004 03	.426137 03	.428678 03
364.5	.438520 03	.441616 03	.413414 03	.417770 03	.420574 03	.424037 03	.426170 03	.428711 03
365.0	.438551 03	.441649 03	.413447 03	.417803 03	.420614 03	.424070 03	.426203 03	.428744 03
365.5	.438582 03	.441681 03	.413480 03	.417836 03	.420654 03	.424103 03	.426236 03	.428777 03
366.0	.438613 03	.441714 03	.413513 03	.417869 03	.420694 03	.424136 03	.426269 03	.428810 03
366.5	.438644 03	.441747 03	.413546 03	.417902 03	.420734 03	.424169 03	.426302 03	.428843 03
367.0	.438675 03	.441779 03	.413579 03	.417935 03	.420774 03	.424202 03	.426335 03	.428876 03
367.5	.438706 03	.441812 03	.413612 03	.417968 03	.420814 03	.424235 03	.426368 03	.428909 03
368.0	.438737 03	.441845 03	.413645 03	.418001 03	.420854 03	.424268 03	.426401 03	.428942 03
368.5	.438768 03	.441878 03	.413678 03	.418034 03	.420894 03	.424301 03	.426434 03	.428975 03
369.0	.438799 03	.441911 03	.413711 03	.418067 03	.420934 03	.424334 03	.426467 03	.429008 03
369.5	.438830 03	.441944 03	.413744 03	.418100 03	.420974 03	.424367 03	.426500 03	.429041 03
370.0	.438861 03	.441977 03	.413777 03	.418133 03	.421014 03	.424400 03	.426533 03	.429074 03
370.5	.438892 03	.442010 03	.413810 03	.418166 03	.421054 03	.424433 03	.426566 03	.429107 03
371.0	.438923 03	.442043 03	.413843 03	.418199 03	.421094 03	.424466 03	.426599 03	.429140 03
371.5	.438954 03	.442076 03	.413876 03	.418232 03	.421134 03	.424499 03	.426632 03	.429173 03
372.0	.438985 03	.442109 03	.413909 03	.418265 03	.421174 03	.424532 03	.426665 03	.429206 03
372.5	.439016 03	.442142 03	.413942 03	.418298 03	.421214 03	.424565 03	.426698 03	.429239 03
373.0	.439047 03	.442175 03	.413975 03	.418331 03	.421254 03	.424598 03	.426731 03	.429272 03
373.5	.439078 03	.442208 03	.414008 03	.418364 03	.421294 03	.424631 03	.426764 03	.429305 03
374.0	.439109 03	.442241 03	.414041 03	.418397 03	.421334 03	.424664 03	.426797 03	.429338 03
374.5	.439140 03	.442274 03	.414074 03	.418430 03	.421374 03	.424697 03	.426830 03	.429371 03
375.0	.439171 03	.442307 03	.414107 03	.418463 03	.421414 03	.424730 03	.426863 03	.429404 03
375.5	.439202 03	.442340 03	.414140 03	.418496 03	.421454 03	.424763 03	.426896 03	.429437 03
376.0	.439233 03	.442373 03	.414173 03	.418529 03	.421494 03	.424796 03	.426929 03	.429470 03
376.5	.439264 03	.442406 03	.414206 03	.418562 03	.421534 03	.424829 03	.426962 03	.429503 03
377.0	.439295 03	.442439 03	.414239 03	.418595 03	.421574 03	.424862 03	.426995 03	.429536 03
377.5	.439326 03	.442472 03	.414272 03	.418628 03	.421614 03	.424895 03	.427028 03	.429569 03
378.0	.439357 03	.442505 03	.414305 03	.418661 03	.421654 03	.424928 03	.427061 03	.429602 03
378.5	.439388 03	.442538 03	.414338 03	.418694 03	.421694 03	.424961 03	.427094 03	.429635 03
379.0	.439419 03	.442571 03	.414371 03	.418727 03	.421734 03	.425000 03	.427127 03	.429668 03
379.5	.439450 03	.442604 03	.414404 03	.418760 03	.421774 03	.425033 03	.427160 03	.429701 03
380.0	.439481 03	.442637 03	.414437 03	.418793 03	.421814 03	.425066 03	.427193 03	.429734 03
380.5	.439512 03	.442670 03	.414470 03	.418826 03	.421854 03	.425100 03	.427226 03	.429767 03
381.0	.439543 03	.442703 03	.414503 03	.418859 03	.421894 03	.425133 03	.427259 03	.429800 03
381.5	.439574 03	.442736 03	.414536 03	.418892 03	.421934 03	.425166 03	.427292 03	.429833 03
382.0	.439605 03	.442769 03	.414569 03	.418925 03	.421974 03	.425200 03	.427325 03	.429866 03
382.5	.439636 03	.442802 03	.414602 03	.418958 03	.422014 03	.425233 03	.427358 03	.429899 03
383.0	.439667 03	.442835 03	.414635 03	.418991 03	.422054 03	.425266 03	.427391 03	.429932 03
383.5	.439698 03	.442868 03	.414668 03	.419024 03	.422094 03	.425300 03	.427424 03	.429965 03
384.0	.439729 03	.442901 03	.414701 03	.419057 03	.422134 03	.425333 03	.427457 03	.429998 03
384.5	.439760 03	.442934 03	.414734 03	.419090 03	.422174 03	.425366 03	.427490 03	.430031 03
385.0	.439791 03	.442967 03	.414767 03	.419123 03	.422214 03	.425400 03	.427523 03	.430064 03
385.5	.439822 03	.443000 03	.414800 03	.419156 03	.422254 03	.425433 03	.427556 03	.430097 03
386.0	.439853 03	.443033 03	.414833 03	.419189 03	.422294 03	.425466 03	.427589 03	.430130 03
386.5	.439884 03	.443066 03	.414866 03	.419222 03	.422334 03	.425500 03	.427622 03	.430163 03
387.0	.439915 03	.443099 03	.414899 03	.419255 03	.422374 03	.425533 03	.427655 03	.430196 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν/Q	.05000	.06000	.07000	.08000	.09000	.10000	.12500	.15000	.17500	.20000	.25000	.30000	.35000	.40000	.45000	.50000	.55000	.60000	.65000	.70000	.75000	.80000	.85000	.90000	.95000	1.00000	
367.5	.435919	.437586	.439253	.440920	.442587	.444254	.445921	.447588	.449255	.450922	.452589	.454256	.455923	.457590	.459257	.460924	.462591	.464258	.465925	.467592	.469259	.470926	.472593	.474260	.475927	.477594	.479261
368.0	.436456	.438123	.439790	.441457	.443124	.444791	.446458	.448125	.449792	.451459	.453126	.454793	.456460	.458127	.459794	.461461	.463128	.464795	.466462	.468129	.469796	.471463	.473130	.474797	.476464	.478131	.479798
368.5	.436993	.438660	.440327	.441994	.443661	.445328	.446995	.448662	.450329	.451996	.453663	.455330	.456997	.458664	.460331	.461998	.463665	.465332	.466999	.468666	.470333	.471999	.473666	.475333	.476999	.478666	.480333
369.0	.437530	.439197	.440864	.442531	.444198	.445865	.447532	.449199	.450866	.452533	.454199	.455866	.457533	.459199	.460866	.462533	.464199	.465866	.467533	.469199	.470866	.472533	.474199	.475866	.477533	.479199	.480866
369.5	.438067	.439734	.441401	.443068	.444735	.446402	.448069	.449736	.451403	.453069	.454736	.456403	.458070	.459737	.461404	.463071	.464738	.466405	.468072	.469739	.471406	.473073	.474739	.476406	.478073	.479740	.481407
370.0	.438604	.440271	.441938	.443605	.445272	.446939	.448606	.450273	.451939	.453606	.455273	.456940	.458607	.460274	.461941	.463608	.465275	.466942	.468609	.470276	.471943	.473609	.475276	.476943	.478610	.480277	.481944
370.5	.439141	.440808	.442475	.444142	.445809	.447476	.449143	.450810	.452477	.454144	.455811	.457478	.459145	.460812	.462479	.464146	.465813	.467480	.469147	.470814	.472481	.474148	.475815	.477482	.479149	.480816	.482483
371.0	.439678	.441345	.443012	.444679	.446346	.448013	.449680	.451347	.453014	.454681	.456348	.458015	.459682	.461349	.463016	.464683	.466350	.468017	.469684	.471351	.473018	.474685	.476352	.478019	.479686	.481353	.483020
371.5	.440215	.441882	.443549	.445216	.446883	.448550	.450217	.451884	.453551	.455218	.456885	.458552	.460219	.461886	.463553	.465220	.466887	.468554	.470221	.471888	.473555	.475222	.476889	.478556	.480223	.481890	.483557
372.0	.440752	.442419	.444086	.445753	.447420	.449087	.450754	.452421	.454088	.455755	.457422	.459089	.460756	.462423	.464090	.465757	.467424	.469091	.470758	.472425	.474092	.475759	.477426	.479093	.480760	.482427	.484094
372.5	.441289	.442956	.444623	.446290	.447957	.449624	.451291	.452958	.454625	.456292	.457959	.459626	.461293	.462960	.464627	.466294	.467961	.469628	.471295	.472962	.474629	.476296	.477963	.479630	.481297	.482964	.484631
373.0	.441826	.443493	.445160	.446827	.448494	.450161	.451828	.453495	.455162	.456829	.458496	.460163	.461830	.463497	.465164	.466831	.468498	.470165	.471832	.473499	.475166	.476833	.478499	.480166	.481833	.483500	.485167
373.5	.442363	.444030	.445697	.447364	.449031	.450698	.452365	.454032	.455699	.457366	.459033	.460700	.462367	.464034	.465701	.467368	.469035	.470702	.472369	.474036	.475703	.477370	.479037	.480704	.482371	.484038	.485705
374.0	.442900	.444567	.446234	.447901	.449568	.451235	.452902	.454569	.456236	.457903	.459570	.461237	.462904	.464571	.466238	.467905	.469572	.471239	.472906	.474573	.476240	.477907	.479574	.481241	.482908	.484575	.486242
374.5	.443437	.445104	.446771	.448438	.450105	.451772	.453439	.455106	.456773	.458440	.460107	.461774	.463441	.465108	.466775	.468442	.470109	.471776	.473443	.475110	.476777	.478444	.480111	.481778	.483445	.485112	.486779
375.0	.443974	.445641	.447308	.448975	.450642	.452309	.453976	.455643	.457310	.458977	.460644	.462311	.463978	.465645	.467312	.468979	.470646	.472313	.473980	.475647	.477314	.478981	.480648	.482315	.483982	.485649	.487316
375.5	.444511	.446178	.447845	.449512	.451179	.452846	.454513	.456180	.457847	.459514	.461181	.462848	.464515	.466182	.467849	.469516	.471183	.472850	.474517	.476184	.477851	.479518	.481185	.482852	.484519	.486186	.487853
376.0	.445048	.446715	.448382	.450049	.451716	.453383	.455050	.456717	.458384	.460051	.461718	.463385	.465052	.466719	.468386	.470053	.471720	.473387	.475054	.476721	.478388	.480055	.481722	.483389	.485056	.486723	.488390
376.5	.445585	.447252	.448919	.450586	.452253	.453920	.455587	.457254	.458921	.460588	.462255	.463922	.465589	.467256	.468923	.470590	.472257	.473924	.475591	.477258	.478925	.480592	.482259	.483926	.485593	.487260	.488927
377.0	.446122	.447789	.449456	.451123	.452790	.454457	.456124	.457791	.459458	.461125	.462792	.464459	.466126	.467793	.469460	.471127	.472794	.474461	.476128	.477795	.479462	.481129	.482796	.484463	.486130	.487797	.489464
377.5	.446659	.448326	.449993	.451660	.453327	.454994	.456661	.458328	.460000	.461667	.463334	.465001	.466668	.468335	.470002	.471669	.473336	.475003	.476670	.478337	.480004	.481671	.483338	.485005	.486672	.488339	.490006
378.0	.447196	.448863	.450530	.452197	.453864	.455531	.457198	.458865	.460532	.462199	.463866	.465533	.467200	.468867	.470534	.472201	.473868	.475535	.477202	.478869	.480536	.482203	.483870	.485537	.487204	.488871	.490538
378.5	.447733	.449400	.451067	.452734	.454401	.456068	.457735	.459402	.461069	.462736	.464403	.466070	.467737	.469404	.471071	.472738	.474405	.476072	.477739	.479406	.481073	.482740	.484407	.486074	.487741	.489408	.491075
379.0	.448270	.449937	.451604	.453271	.454938	.456605	.458272	.459939	.461606	.463273	.464940	.466607	.468274	.469941	.471608	.473275	.474942	.476609	.478276	.479943	.481610	.483277	.484944	.486611	.488278	.489945	.491612
379.5	.448807	.450474	.452141	.453808	.455475	.457142	.458809	.460476	.462143	.463810	.465477	.467144	.468811	.470478	.472145	.473812	.475479	.477146	.478813	.480480	.482147	.483814	.485481	.487148	.488815	.490482	.492149
380.0	.449344	.451011	.452678	.454345	.456012	.457679	.459346	.461013	.462680	.464347	.466014	.467681	.469348	.471015	.472682	.474349	.476016	.477683	.479350	.481017	.482684	.484351	.486018	.487685	.489352	.491019	.492686
380.5	.449881	.451548	.453215	.454882	.456549	.458216	.459883	.461550	.463217	.464884	.466551	.468218	.469885	.471552	.473219	.474886	.476553	.478220	.479887	.481554	.483221	.484888	.486555	.488222	.489889	.491556	.493223
381.0	.450418	.452085	.453752	.455419	.457086	.458753	.460420	.462087	.463754	.465421	.467088	.468755	.470422	.472089	.473756	.475423	.477090	.478757	.480424	.482091	.483758	.485425	.487092	.488759	.490426	.492093	.493760
381.5	.450955	.452622	.454289	.455956	.457623	.459290	.460957	.462624	.464291	.465958	.467625	.469292	.470959	.472626	.474293	.475960	.477627	.479294	.480961	.482628	.484295	.485962	.487629	.489296	.490963	.492630	.494297
382.0	.451492	.453159	.454826	.456493	.458160	.459827	.461494	.463161	.464828	.466495	.468162	.469829	.471496	.473163	.474830	.476497	.478164	.479831	.481498	.483165	.484832	.486499	.488166	.489833	.491500	.493167	.494834
382.5	.452029	.453696	.455363	.457030	.458697	.460364	.462031	.463698	.465365	.467032	.468700	.470367	.472034	.473701	.475368	.477035	.478702	.480369	.482036	.483703	.485370	.487037	.488704	.490371	.492038	.493705	.495372
383.0	.452566	.454233	.455900	.457567	.459234	.460901	.462568	.464235	.465902	.467569	.469236	.470903	.472570	.474237	.475904	.477571	.479238	.480905	.482572	.484239	.485906	.487573	.489240	.490907	.492574	.494241	.495908
383.5	.453103	.454770	.456437	.458104	.459771	.461438	.463105	.464772	.466439	.468106	.469773	.471440	.473107	.474774	.476441	.478108	.479775	.481442	.483109	.484776	.486443	.488110	.489777	.491444	.493111	.494778	.496445
384.0	.453640	.455307	.456974	.458641	.460308	.461975	.463642	.465309	.466976	.468643	.470310	.471977	.473644	.475311	.476978	.478645	.480312	.481979	.483646	.485313	.486980	.488647	.490314	.491981	.493648	.495315	.496982
384.5	.454177	.455844	.457511	.459178	.460845	.462512	.464179	.465846	.467513	.469180	.470847	.472514	.474181	.475848	.477515	.479182	.480849	.482516	.484183	.485850	.487517	.489184	.490851	.492518	.494185	.495852	.497519
385.0	.454714	.456381	.458048	.459715	.461382	.463049	.464716	.466383	.468050	.469717	.471384	.473051	.474718	.476385	.478052	.479719	.481386	.483053	.484720	.486387	.488054	.489721	.491388	.493055	.494722	.496389	.498056
385.5	.455251	.456918	.458585	.460252	.461919	.463586	.465253	.466920	.468587	.470254	.471921	.473588	.475255	.476922	.478589	.480256	.481923	.483590	.485257	.486924	.488591	.490258	.491925	.493592	.495259	.496926	.498593
386.0	.455788	.457455	.459122	.460789	.462456	.464123	.465790	.467457	.469124	.470791	.472458	.474125	.475792	.477459	.479126	.480793	.482460	.484127	.485794	.487461	.489128	.490795	.492462	.494129	.495796	.497463	.499130
386.5	.456325	.457992	.459659	.461326	.462993	.464660	.466327	.467994	.469661	.471328	.472995	.474															

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.05500	.05700	.06000	.06500	.07000	.07500	.08000	.08500	.09000	.09500	.10000	.10500	.11000	.11500	.12000	.12500	.13000
412.5	.460854 03	.462419 03	.464134 03	.466039 03	.468188 03	.470665 03	.473612 03	.477284 03	.481503 03	.486393 03	.491970 03	.498320 03	.505456 03	.513383 03	.522110 03	.531747 03	.542293 03
413.0	.461383 03	.462948 03	.464665 03	.466570 03	.468720 03	.471200 03	.474148 03	.477822 03	.482041 03	.486830 03	.492407 03	.498756 03	.505892 03	.513819 03	.522546 03	.532183 03	.542729 03
413.5	.461912 03	.463478 03	.465195 03	.467102 03	.469253 03	.471734 03	.474683 03	.478357 03	.482576 03	.487365 03	.492942 03	.499291 03	.506427 03	.514354 03	.523081 03	.532718 03	.543264 03
414.0	.462440 03	.464007 03	.465726 03	.467633 03	.469786 03	.472268 03	.475219 03	.478893 03	.483112 03	.487901 03	.493478 03	.499827 03	.506963 03	.514890 03	.523617 03	.533254 03	.543800 03
414.5	.462969 03	.464537 03	.466256 03	.468165 03	.470318 03	.472800 03	.475755 03	.479429 03	.483648 03	.488437 03	.493914 03	.499991 03	.507027 03	.514954 03	.523681 03	.533318 03	.543864 03
415.0	.463497 03	.465066 03	.466785 03	.468696 03	.470851 03	.473336 03	.476290 03	.479972 03	.484191 03	.488980 03	.494257 03	.499834 03	.506870 03	.514797 03	.523524 03	.533161 03	.543707 03
415.5	.464026 03	.465596 03	.467317 03	.469228 03	.471384 03	.473870 03	.476826 03	.480508 03	.484727 03	.489516 03	.494793 03	.499970 03	.507006 03	.514933 03	.523660 03	.533297 03	.543843 03
416.0	.464554 03	.466125 03	.467847 03	.469759 03	.471916 03	.474404 03	.477362 03	.481044 03	.485263 03	.490052 03	.495329 03	.499906 03	.506942 03	.514869 03	.523596 03	.533233 03	.543779 03
416.5	.465083 03	.466654 03	.468378 03	.470291 03	.472449 03	.474938 03	.477897 03	.481579 03	.485798 03	.490587 03	.495864 03	.499841 03	.506877 03	.514804 03	.523531 03	.533168 03	.543714 03
417.0	.465611 03	.467184 03	.468908 03	.470822 03	.472982 03	.475472 03	.478433 03	.482115 03	.486334 03	.491123 03	.496400 03	.499877 03	.506913 03	.514840 03	.523567 03	.533204 03	.543750 03
417.5	.466140 03	.467713 03	.469438 03	.471353 03	.473514 03	.476006 03	.478968 03	.482650 03	.486869 03	.491658 03	.496935 03	.499812 03	.506848 03	.514775 03	.523502 03	.533139 03	.543685 03
418.0	.466668 03	.468243 03	.469968 03	.471885 03	.474047 03	.476540 03	.479504 03	.483186 03	.487405 03	.492194 03	.497471 03	.499848 03	.506884 03	.514811 03	.523538 03	.533175 03	.543721 03
418.5	.467197 03	.468772 03	.470499 03	.472416 03	.474579 03	.477074 03	.480039 03	.483721 03	.487940 03	.492729 03	.497906 03	.499883 03	.506919 03	.514846 03	.523573 03	.533210 03	.543757 03
419.0	.467725 03	.469301 03	.471029 03	.472947 03	.475112 03	.477607 03	.480575 03	.484257 03	.488476 03	.493265 03	.498442 03	.499819 03	.506855 03	.514782 03	.523509 03	.533146 03	.543693 03
419.5	.468254 03	.469830 03	.471559 03	.473479 03	.475644 03	.478141 03	.481110 03	.484792 03	.488911 03	.493700 03	.498877 03	.499854 03	.506890 03	.514817 03	.523544 03	.533181 03	.543729 03
420.0	.468782 03	.470360 03	.472090 03	.474010 03	.476177 03	.478675 03	.481646 03	.485328 03	.489447 03	.494236 03	.499413 03	.499890 03	.506926 03	.514853 03	.523580 03	.533217 03	.543765 03
420.5	.469310 03	.470889 03	.472620 03	.474541 03	.476709 03	.479209 03	.482181 03	.485863 03	.490082 03	.494871 03	.499948 03	.499825 03	.506861 03	.514788 03	.523515 03	.533152 03	.543701 03
421.0	.469839 03	.471418 03	.473150 03	.475072 03	.477242 03	.479743 03	.482717 03	.486399 03	.490618 03	.495407 03	.499984 03	.499861 03	.506897 03	.514824 03	.523551 03	.533188 03	.543737 03
421.5	.470367 03	.471947 03	.473680 03	.475604 03	.477774 03	.480276 03	.483252 03	.486934 03	.491153 03	.495942 03	.499919 03	.499796 03	.506832 03	.514759 03	.523488 03	.533125 03	.543668 03
422.0	.470895 03	.472477 03	.474210 03	.476135 03	.478306 03	.480810 03	.483787 03	.487469 03	.491688 03	.496477 03	.499854 03	.499731 03	.506767 03	.514694 03	.523423 03	.533060 03	.543604 03
422.5	.471424 03	.473006 03	.474740 03	.476666 03	.478839 03	.481344 03	.484323 03	.488005 03	.492224 03	.497013 03	.499890 03	.499767 03	.506803 03	.514730 03	.523458 03	.533095 03	.543540 03
423.0	.471952 03	.473535 03	.475270 03	.477197 03	.479371 03	.481878 03	.484858 03	.488540 03	.492759 03	.497548 03	.499825 03	.499702 03	.506738 03	.514665 03	.523385 03	.533022 03	.543476 03
423.5	.472480 03	.474063 03	.475801 03	.477728 03	.479903 03	.482411 03	.485393 03	.489075 03	.493294 03	.498083 03	.499860 03	.499737 03	.506773 03	.514701 03	.523412 03	.533058 03	.543412 03
424.0	.473009 03	.474593 03	.476331 03	.478260 03	.480436 03	.482945 03	.485929 03	.489611 03	.493830 03	.498619 03	.499896 03	.499773 03	.506809 03	.514738 03	.523439 03	.533085 03	.543348 03
424.5	.473537 03	.475122 03	.476861 03	.478791 03	.480968 03	.483479 03	.486464 03	.490146 03	.494365 03	.499154 03	.499831 03	.499708 03	.506744 03	.514675 03	.523466 03	.533112 03	.543284 03
425.0	.474065 03	.475652 03	.477391 03	.479322 03	.481500 03	.484012 03	.486999 03	.490681 03	.494900 03	.499689 03	.499866 03	.499743 03	.506780 03	.514712 03	.523493 03	.533139 03	.543220 03
425.5	.474593 03	.476181 03	.477921 03	.479853 03	.482033 03	.484546 03	.487535 03	.491217 03	.495436 03	.499925 03	.499802 03	.499679 03	.506815 03	.514749 03	.523520 03	.533166 03	.543156 03
426.0	.475122 03	.476710 03	.478451 03	.480384 03	.482565 03	.485078 03	.488070 03	.491752 03	.495971 03	.499960 03	.499837 03	.499714 03	.506851 03	.514786 03	.523547 03	.533193 03	.543092 03
426.5	.475650 03	.477239 03	.478981 03	.480915 03	.483097 03	.485613 03	.488605 03	.492287 03	.496506 03	.499995 03	.499872 03	.499749 03	.506887 03	.514823 03	.523574 03	.533220 03	.543028 03
427.0	.476178 03	.477768 03	.479511 03	.481446 03	.483629 03	.486147 03	.489140 03	.492820 03	.497039 03	.499928 03	.499805 03	.499682 03	.506923 03	.514860 03	.523601 03	.533247 03	.542964 03
427.5	.476706 03	.478297 03	.480041 03	.481977 03	.484161 03	.486680 03	.489675 03	.493355 03	.497574 03	.499963 03	.499840 03	.499717 03	.506959 03	.514897 03	.523628 03	.533274 03	.542900 03
428.0	.477234 03	.478826 03	.480571 03	.482508 03	.484694 03	.487214 03	.490210 03	.493890 03	.498109 03	.499978 03	.499855 03	.499732 03	.506995 03	.514934 03	.523655 03	.533301 03	.542836 03
428.5	.477762 03	.479355 03	.481101 03	.483039 03	.485226 03	.487747 03	.490745 03	.494425 03	.498644 03	.499993 03	.499870 03	.499747 03	.507031 03	.514971 03	.523682 03	.533328 03	.542772 03
429.0	.478290 03	.479884 03	.481631 03	.483570 03	.485758 03	.488281 03	.491281 03	.494961 03	.499180 03	.499999 03	.499876 03	.499753 03	.507067 03	.515004 03	.523709 03	.533355 03	.542708 03
429.5	.478818 03	.480413 03	.482160 03	.484101 03	.486290 03	.488814 03	.491816 03	.495496 03	.499715 03	.499994 03	.499871 03	.499748 03	.507101 03	.515041 03	.523736 03	.533382 03	.542644 03
430.0	.479347 03	.480942 03	.482690 03	.484632 03	.486822 03	.489348 03	.492351 03	.496031 03	.499950 03	.499999 03	.499876 03	.499753 03	.507134 03	.515074 03	.523763 03	.533409 03	.542580 03
430.5	.479875 03	.481470 03	.483220 03	.485163 03	.487354 03	.489881 03	.492886 03	.496566 03	.499985 03	.499999 03	.499876 03	.499753 03	.507167 03	.515107 03	.523790 03	.533436 03	.542516 03
431.0	.480403 03	.481999 03	.483750 03	.485693 03	.487886 03	.490414 03	.493421 03	.497101 03	.499999 03	.499999 03	.499876 03	.499753 03	.507200 03	.515140 03	.523817 03	.533463 03	.542452 03
431.5	.480931 03	.482528 03	.484280 03	.486224 03	.488418 03	.490946 03	.493953 03	.497633 03	.499999 03	.499999 03	.499876 03	.499753 03	.507233 03	.515173 03	.523844 03	.533490 03	.542388 03
432.0	.481459 03	.483057 03	.484810 03	.486755 03	.488950 03	.491481 03	.494491 03	.498171 03	.499999 03	.499999 03	.499876 03	.499753 03	.507266 03	.515206 03	.523871 03	.533517 03	.542324 03
432.5	.481987 03	.483586 03	.485339 03	.487286 03	.489482 03	.492015 03	.495025 03	.498705 03	.499999 03	.499999 03	.499876 03	.499753 03	.507299 03	.515239 03	.523898 03	.533544 03	.542260 03
433.0	.482515 03	.484115 03	.485869 03	.487817 03	.490014 03	.492548 03	.495560 03	.499240 03	.499999 03	.499999 03	.499876 03	.499753 03	.507332 03	.515272 03	.523925 03	.533571 03	.542196 03
433.5	.483043 03	.484644 03	.486399 03	.488348 03	.490546 03	.493081 03	.496095 03	.499775 03	.499999 03	.499999 03	.499876 03	.499753 03	.507365 03	.515305 03	.523952 03	.533598 03	.542132 03
434.0	.483571 03	.485172 03	.486929 03	.488878 03	.491078 03	.493614 03	.496630 03	.499910 03	.499999 03	.499999 03	.499876 03	.499753 03	.507398 03	.515338 03	.523979 03	.533625 03	.542068 03
434.5	.484099 03	.485701 03	.487458 03	.489409 03	.491610 03	.494148 03	.497165 03	.499945 03	.499999 03	.499999 03	.499876 03	.499753 03	.507431 03	.515371 03	.524006 03	.533652 03	.542004 03
435.0	.484626 03	.486228 03	.487986 03	.489937 03	.492142 03	.494681 03	.497700 03	.499979 03	.499999 03	.499999 03	.499876 03	.499753 03	.507464 03	.515404 03	.524033 03	.533679 03	.541940 03
435.5	.485154 03	.486756 03	.488515 03	.490466 03	.492671 03	.495210 03	.498229 03	.499999 03	.499999 03	.499999 03	.499876 03	.499753 03	.507497 03	.515437 03	.524060 03	.533706 03	.541876 03
436.0	.485682 03	.487284 03	.489043 03	.491094 03	.493300 03	.495839 03	.498858 03	.499999 03	.499999 03	.499999 03	.499876 03	.499753 03	.507530 03				

Percentage Points of the χ^2 -Distribution Values of χ^2 in Terms of Q and ν

	.010000	.012500	.015000	.020000	.025000	.030000	.040000	.045000	.050000	.055000	.060000	.065000	.070000	.075000	.080000	.085000	.090000	.095000	.100000
437.5	509240	508667	508145	507374	506347	505051	503481	501640	499522	497199	494651	491881	488893	485686	482260	478726	475093	471360	509240
438.0	509780	509207	508682	507910	506883	505587	503917	501976	499754	497331	494561	491691	488703	485596	482170	478636	474903	471070	509780
438.5	510319	509746	509221	508449	507422	506126	504456	502515	500293	497770	494900	491930	488942	485835	482409	478875	475142	471309	510319
439.0	510858	510285	509760	508988	507961	506665	505005	503064	500842	498319	495449	492479	489491	486384	482958	479424	475691	471858	510858
439.5	511398	510825	510300	509528	508501	507205	505545	503604	501382	498859	495989	492919	489931	486824	483398	479864	476131	472298	511398
440.0	511937	511364	510839	510067	509040	507744	506084	504143	501921	499398	496528	493458	490470	487363	483937	480403	476670	472837	511937
440.5	512476	511903	511378	510606	509579	508283	506623	504682	502460	499937	497067	493997	491009	487902	484476	480942	477209	473376	512476
441.0	513015	512442	511917	511145	510118	508822	507162	505221	503000	500477	497607	494537	491549	488442	485016	481482	477749	473916	513015
441.5	513554	512981	512456	511684	510657	509361	507701	505760	503539	501016	498146	495076	492088	489000	485574	482040	478307	474474	513554
442.0	514094	513521	512996	512224	511197	509891	508231	506290	504069	501546	498676	495606	492618	489530	486104	482570	478837	474904	514094
442.5	514633	514060	513535	512763	511736	510440	508780	506839	504618	502095	499225	496155	493167	490080	486654	483120	479387	475454	514633
443.0	515172	514599	514074	513302	512275	510979	509319	507378	505157	502634	499764	496694	493706	490619	487193	483659	479926	475993	515172
443.5	515711	515138	514613	513841	512814	511518	509858	507917	505696	503173	500303	497233	494245	491158	487732	484198	480465	476532	515711
444.0	516250	515677	515152	514380	513353	512057	510397	508456	506235	503712	500842	497772	494784	491697	488271	484737	480904	476971	516250
444.5	516789	516216	515691	514919	513892	512596	510936	508995	506774	504251	501381	498311	495323	492236	488810	485276	481543	477610	516789
445.0	517328	516755	516230	515458	514431	513135	511475	509534	507313	504790	501920	498850	495862	492875	489449	485915	482182	478249	517328
445.5	517867	517294	516769	515997	514970	513674	512014	510073	507852	505329	502459	499389	496401	493413	490007	486473	482740	478807	517867
446.0	518406	517833	517308	516536	515509	514213	512553												

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

Q	.05000	.04500	.04000	.03500	.03000	.02500	.02000	.01500	.01250	.01000
462.5	.513637 03	.515287 03	.517896 03	.519104 03	.521369 03	.523981 03	.527086 03	.530955 03	.533335 03	.536180 03
463.0	.514164 03	.515815 03	.517625 03	.519334 03	.521900 03	.524513 03	.527620 03	.531490 03	.533872 03	.536718 03
463.5	.514691 03	.516342 03	.518152 03	.519861 03	.522427 03	.525040 03	.528145 03	.532014 03	.534396 03	.537242 03
464.0	.515218 03	.516869 03	.518679 03	.520388 03	.522954 03	.525567 03	.528672 03	.532541 03	.534923 03	.537769 03
464.5	.515745 03	.517396 03	.519206 03	.520915 03	.523481 03	.526094 03	.529199 03	.533068 03	.535450 03	.538296 03
465.0	.516272 03	.517923 03	.519733 03	.521442 03	.524008 03	.526621 03	.529726 03	.533595 03	.535977 03	.538823 03
465.5	.516799 03	.518450 03	.520260 03	.521969 03	.524535 03	.527148 03	.530253 03	.534122 03	.536504 03	.539350 03
466.0	.517326 03	.518977 03	.520787 03	.522496 03	.525062 03	.527675 03	.530780 03	.534649 03	.537031 03	.539877 03
466.5	.517853 03	.519504 03	.521314 03	.523023 03	.525589 03	.528202 03	.531307 03	.535176 03	.537558 03	.540404 03
467.0	.518380 03	.520031 03	.521841 03	.523550 03	.526116 03	.528729 03	.531834 03	.535703 03	.538085 03	.540931 03
467.5	.518907 03	.520558 03	.522368 03	.524077 03	.526643 03	.529256 03	.532361 03	.536230 03	.538612 03	.541458 03
468.0	.519434 03	.521085 03	.522895 03	.524604 03	.527170 03	.529783 03	.532888 03	.536757 03	.539139 03	.541985 03
468.5	.519961 03	.521612 03	.523422 03	.525131 03	.527697 03	.530310 03	.533415 03	.537284 03	.539666 03	.542512 03
469.0	.520488 03	.522139 03	.523949 03	.525658 03	.528224 03	.530837 03	.533942 03	.537811 03	.540193 03	.543039 03
469.5	.521015 03	.522666 03	.524476 03	.526185 03	.528751 03	.531364 03	.534469 03	.538338 03	.540720 03	.543566 03
470.0	.521542 03	.523193 03	.525003 03	.526712 03	.529278 03	.531891 03	.535006 03	.538875 03	.541257 03	.544103 03
470.5	.522069 03	.523720 03	.525530 03	.527239 03	.529805 03	.532418 03	.535533 03	.539402 03	.541784 03	.544630 03
471.0	.522596 03	.524247 03	.526057 03	.527766 03	.530332 03	.532945 03	.536060 03	.540029 03	.542411 03	.545257 03
471.5	.523123 03	.524774 03	.526584 03	.528293 03	.530859 03	.533472 03	.536587 03	.540556 03	.542938 03	.545784 03
472.0	.523650 03	.525301 03	.527111 03	.528820 03	.531386 03	.534009 03	.537124 03	.541093 03	.543475 03	.546321 03
472.5	.524177 03	.525828 03	.527638 03	.529347 03	.531913 03	.534536 03	.537651 03	.541620 03	.544002 03	.546848 03
473.0	.524704 03	.526355 03	.528165 03	.529874 03	.532440 03	.535063 03	.538178 03	.542147 03	.544529 03	.547375 03
473.5	.525231 03	.526882 03	.528692 03	.530401 03	.532967 03	.535590 03	.538705 03	.542674 03	.545056 03	.547902 03
474.0	.525758 03	.527409 03	.529219 03	.530928 03	.533494 03	.536117 03	.539232 03	.543201 03	.545583 03	.548429 03
474.5	.526285 03	.527936 03	.529746 03	.531455 03	.534021 03	.536644 03	.539759 03	.543728 03	.546110 03	.548956 03
475.0	.526812 03	.528463 03	.530273 03	.531982 03	.534548 03	.537171 03	.540286 03	.544255 03	.546637 03	.549483 03
475.5	.527339 03	.528990 03	.530800 03	.532509 03	.535075 03	.537698 03	.540813 03	.544782 03	.547164 03	.550010 03
476.0	.527866 03	.529517 03	.531327 03	.533036 03	.535602 03	.538225 03	.541340 03	.545309 03	.547691 03	.550537 03
476.5	.528393 03	.530044 03	.531854 03	.533563 03	.536129 03	.538752 03	.541867 03	.545836 03	.548218 03	.551064 03
477.0	.528920 03	.530571 03	.532381 03	.534090 03	.536656 03	.539279 03	.542394 03	.546363 03	.548745 03	.551591 03
477.5	.529447 03	.531098 03	.532908 03	.534617 03	.537183 03	.539806 03	.542921 03	.546890 03	.549272 03	.552118 03
478.0	.529974 03	.531625 03	.533435 03	.535144 03	.537710 03	.540333 03	.543448 03	.547417 03	.549799 03	.552645 03
478.5	.530501 03	.532152 03	.533962 03	.535671 03	.538237 03	.540860 03	.543975 03	.547944 03	.550326 03	.553172 03
479.0	.531028 03	.532679 03	.534489 03	.536198 03	.538764 03	.541387 03	.544502 03	.548471 03	.550853 03	.553700 03
479.5	.531555 03	.533206 03	.535016 03	.536725 03	.539291 03	.541914 03	.545029 03	.548998 03	.551380 03	.554226 03
480.0	.532082 03	.533733 03	.535543 03	.537252 03	.539818 03	.542441 03	.545556 03	.549525 03	.551907 03	.554753 03
480.5	.532609 03	.534260 03	.536070 03	.537779 03	.540345 03	.542968 03	.546083 03	.550052 03	.552434 03	.555280 03
481.0	.533136 03	.534787 03	.536597 03	.538306 03	.540872 03	.543495 03	.546610 03	.550579 03	.552961 03	.555807 03
481.5	.533663 03	.535314 03	.537124 03	.538833 03	.541409 03	.544032 03	.547147 03	.551116 03	.553498 03	.556344 03
482.0	.534190 03	.535841 03	.537651 03	.539360 03	.541936 03	.544559 03	.547674 03	.551643 03	.554025 03	.556871 03
482.5	.534717 03	.536368 03	.538178 03	.539887 03	.542463 03	.545086 03	.548201 03	.552170 03	.554552 03	.557398 03
483.0	.535244 03	.536895 03	.538705 03	.540414 03	.542990 03	.545613 03	.548728 03	.552697 03	.555079 03	.557925 03
483.5	.535771 03	.537422 03	.539232 03	.540941 03	.543517 03	.546140 03	.549255 03	.553224 03	.555606 03	.558452 03
484.0	.536298 03	.537949 03	.539759 03	.541468 03	.544044 03	.546667 03	.549782 03	.553751 03	.556133 03	.558979 03
484.5	.536825 03	.538476 03	.540286 03	.541995 03	.544571 03	.547194 03	.550309 03	.554278 03	.556660 03	.559506 03
485.0	.537352 03	.539003 03	.540813 03	.542522 03	.545098 03	.547721 03	.550836 03	.554805 03	.557187 03	.560033 03
485.5	.537879 03	.539530 03	.541340 03	.543049 03	.545625 03	.548248 03	.551363 03	.555332 03	.557714 03	.560560 03
486.0	.538406 03	.540057 03	.541867 03	.543576 03	.546152 03	.548775 03	.551890 03	.555859 03	.558241 03	.561087 03
486.5	.538933 03	.540584 03	.542394 03	.544103 03	.546679 03	.549302 03	.552417 03	.556386 03	.558768 03	.561614 03
487.0	.539460 03	.541111 03	.542921 03	.544630 03	.547206 03	.549829 03	.552944 03	.556913 03	.559295 03	.562141 03
487.5	.539987 03	.541638 03	.543448 03	.545157 03	.547733 03	.550356 03	.553471 03	.557440 03	.559822 03	.562668 03
488.0	.540514 03	.542165 03	.543975 03	.545684 03	.548260 03	.550883 03	.553998 03	.557967 03	.560349 03	.563195 03
488.5	.541041 03	.542692 03	.544502 03	.546211 03	.548787 03	.551410 03	.554525 03	.558494 03	.560876 03	.563722 03
489.0	.541568 03	.543219 03	.545029 03	.546738 03	.549314 03	.551937 03	.555052 03	.559021 03	.561403 03	.564249 03
489.5	.542095 03	.543746 03	.545556 03	.547265 03	.549841 03	.552464 03	.555579 03	.559548 03	.561930 03	.564776 03
490.0	.542622 03	.544273 03	.546083 03	.547792 03	.550368 03	.552991 03	.556106 03	.560075 03	.562457 03	.565303 03
490.5	.543149 03	.544800 03	.546610 03	.548319 03	.550895 03	.553518 03	.556633 03	.560602 03	.562984 03	.565830 03
491.0	.543676 03	.545327 03	.547137 03	.548846 03	.551422 03	.554045 03	.557160 03	.561129 03	.563511 03	.566357 03
491.5	.544203 03	.545854 03	.547664 03	.549373 03	.551949 03	.554572 03	.557687 03	.561656 03	.564038 03	.566884 03
492.0	.544730 03	.546381 03	.548191 03	.549900 03	.552476 03	.555099 03	.558214 03	.562183 03	.564565 03	.567411 03
492.5	.545257 03	.546908 03	.548718 03	.550427 03	.552993 03	.555616 03	.558731 03	.562700 03	.565082 03	.567928 03
493.0	.545784 03	.547435 03	.549245 03	.550954 03	.553530 03	.556153 03	.559268 03	.563237 03	.565619 03	.568465 03
493.5	.546311 03	.547962 03	.549772 03	.551481 03	.554057 03	.556680 03	.559795 03	.563764 03	.566146 03	.568992 03
494.0	.546838 03	.548489 03	.550299 03	.552008 03	.554584 03	.557207 03	.560322 03	.564291 03	.566673 03	.569519 03
494.5	.547365 03	.549016 03	.550826 03	.552535 03	.555111 03	.557734 03	.560849 03	.564818 03	.567199 03	.570045 03
495.0	.547892 03	.549543 03	.551353 03	.553062 03	.555638 03	.558261 03	.561376 03	.565345 03	.567727 03	.570573 03
495.5	.548419 03	.550070 03	.551880 03	.553589 03	.556165 03	.558788 03	.561903 03	.565872 03	.568254 03	.571100 03
496.0	.548946 03	.550597 03	.552407 03	.554116 03	.556692 03	.559315 03	.562430 03	.566400 03	.568782 03	.571628 03
496.5	.549473 03	.551124 03	.552934 03	.554643 03	.557219 03	.559842 03	.562957 03	.566926 03	.569308 03	.572154 03
497.0	.549999 03	.551650 03	.553460 03	.555169 03	.557745 03	.560368 03	.563483 03	.567452 03	.569834 03	.572680 03
497.5	.550526 03	.552177 03	.553987 03	.555696 03	.558272 03	.560895 03	.564010 03	.567979 03	.570361 03	.573207 03
498.0	.551053 03	.552704 03	.554514 03	.556223 03	.558809 03	.561432 03	.564547 03	.568516 03	.570898 03	.573744 03
498.5	.551580 03	.553231 03	.555041 03	.556750 03	.559326 03	.561949 03	.565064 03	.569033 03	.571415 03	.574261 03
499.0	.552107 03	.553758 03	.555568 03	.557277 03	.559853 03	.562476 03	.565591 03	.569560 03	.571942 03	.574788 03
499.5	.552634 03	.554285 03	.556095 03	.557804 03	.560380 03	.562993 03	.566108 03	.570077 03	.572459 03	.575305 03
500.0	.553161 03	.554812 03	.556622 03	.558331 03	.560907 03	.563530 03	.566645 03	.570614 03	.572996 03	.575842 03

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

[illegible]

r\c	007500	035500	062500	000100	000050	000010	000005	000001
1	254379 01	134955 01	407920 01	567252 01	657533 01	924020 01	104350 02	148091 02
2	156494 01	143112 01	525554 01	672735 01	787676 01	106325 02	116479 02	159725 02
3	427852 01	492727 01	637719 01	755521 01	873336 01	115410 02	127756 02	159689 02
4	458750 01	553919 01	656123 01	820333 01	960409 01	125539 02	135224 02	177156 02
5	537475 01	603152 01	711240 01	825289 01	937154 01	126566 02	141175 02	183660 02
6	575735 01	644114 01	763142 01	923787 01	104728 02	133893 02	146620 02	189420 02
7	614103 01	683589 01	805916 01	967813 01	109270 02	138731 02	151563 02	194659 02
8	643812 01	723719 01	843558 01	101852 02	117485 02	143205 02	156137 02	199510 02
9	683240 01	755211 01	873777 01	104666 02	114707 02	147399 02	160424 02	204062 02
10	714914 01	787934 01	914059 01	108276 02	121157 02	151367 02	164461 02	209373 02
11	745149 01	819117 01	946754 01	111717 02	124712 02	155151 02	168350 02	212406 02
12	774160 01	849297 01	978121 01	115017 02	128122 02	158780 02	172062 02	216433 02
13	802187 01	877980 01	100836 02	118190 02	131400 02	162277 02	175639 02	220239 02
14	829111 01	905953 01	103762 02	121275 02	134657 02	165660 02	179392 02	223931 02
15	855685 01	933112 01	106683 02	124262 02	137672 02	168944 02	182457 02	227496 02
16	881339 01	959354 01	109369 02	127169 02	140654 02	172139 02	185726 02	230976 02
17	906406 01	985375 01	112069 02	130085 02	143604 02	175255 02	188913 02	234370 02
18	930936 01	101063 02	114704 02	132778 02	146466 02	178301 02	192029 02	237688 02
19	954975 01	103580 02	117293 02	135492 02	149269 02	181283 02	195079 02	240936 02
20	978571 01	105966 02	119829 02	138155 02	152010 02	184207 02	198070 02	244121 02
21	100176 02	108352 02	122320 02	140770 02	154717 02	187077 02	203006 02	247342 02
22	102458 02	110750 02	124770 02	143341 02	157370 02	189899 02	203992 02	250329 02
23	104719 02	113011 02	127182 02	145971 02	159981 02	192675 02	206731 02	253346 02
24	106921 02	115230 02	129559 02	148364 02	162557 02	195469 02	209527 02	256325 02
25	109128 02	117510 02	131903 02	150822 02	165089 02	198104 02	212284 02	259260 02
26	111327 02	119757 02	134217 02	153247 02	167651 02	200763 02	215002 02	262155 02
27	113504 02	121949 02	136522 02	155642 02	170084 02	203387 02	217686 02	265013 02
28	115686 02	124116 02	138761 02	157979 02	172512 02	205979 02	220337 02	267836 02
29	117869 02	126260 02	140994 02	160348 02	174914 02	208542 02	222957 02	270626 02
30	119962 02	128342 02	143213 02	162662 02	177300 02	211075 02	225647 02	273384 02
31	122077 02	130431 02	145493 02	164953 02	179661 02	213502 02	228110 02	276112 02
32	124214 02	132563 02	147657 02	167220 02	181998 02	216063 02	230647 02	278812 02
33	126372 02	13462						

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.007500	.005000	.002500	.001000	.000500	.000100	.000050	.000010	.000005	.000001
5.1	.159535 02	.169330 02	.185759 02	.207135 02	.223095 02	.259608 02	.275143 02	.310866 02	.326123 02	.361309 02
5.2	.163377 02	.171156 02	.187652 02	.209109 02	.225126 02	.261756 02	.277336 02	.313156 02	.328453 02	.363722 02
5.3	.163352 02	.172973 02	.189536 02	.211074 02	.227146 02	.263893 02	.279519 02	.315435 02	.330770 02	.366122 02
5.4	.164019 02	.174782 02	.191412 02	.213030 02	.229157 02	.266019 02	.281690 02	.317702 02	.333075 02	.368509 02
5.5	.165078 02	.176583 02	.193279 02	.214976 02	.231158 02	.268134 02	.283850 02	.319957 02	.335368 02	.370884 02
5.6	.166433 02	.178376 02	.195138 02	.216913 02	.233150 02	.270240 02	.285999 02	.322201 02	.337650 02	.373246 02
5.7	.171175 02	.183162 02	.199988 02	.218942 02	.235132 02	.272335 02	.288138 02	.324434 02	.339920 02	.375590 02
5.8	.171913 02	.183940 02	.200831 02	.220762 02	.237106 02	.274420 02	.290268 02	.326657 02	.342179 02	.377937 02
5.9	.173644 02	.185711 02	.202666 02	.222674 02	.239071 02	.276496 02	.292387 02	.328869 02	.344428 02	.380266 02
6.0	.175369 02	.187476 02	.204494 02	.224577 02	.241020 02	.278563 02	.294457 02	.331071 02	.346667 02	.382583 02
6.1	.177087 02	.189234 02	.206315 02	.226474 02	.242977 02	.280621 02	.296598 02	.333263 02	.348895 02	.384890 02
6.2	.178799 02	.190955 02	.208020 02	.228162 02	.244917 02	.282671 02	.298690 02	.335445 02	.351114 02	.387187 02
6.3	.180505 02	.192730 02	.209735 02	.230243 02	.246880 02	.284711 02	.300773 02	.337618 02	.353323 02	.389474 02
6.4	.182205 02	.194468 02	.211735 02	.232117 02	.248775 02	.286744 02	.302847 02	.339782 02	.355522 02	.391751 02
6.5	.183899 02	.196201 02	.213523 02	.233864 02	.250693 02	.288768 02	.304913 02	.341937 02	.357713 02	.394018 02
6.6	.185588 02	.197927 02	.215216 02	.235644 02	.252637 02	.290785 02	.306971 02	.344083 02	.359894 02	.396276 02
6.7	.187271 02	.199648 02	.216907 02	.237393 02	.254597 02	.292793 02	.309021 02	.346221 02	.362067 02	.398525 02
6.8	.188948 02	.193363 02	.218672 02	.239144 02	.256404 02	.294795 02	.311063 02	.348351 02	.364232 02	.400765 02
6.9	.190621 02	.195073 02	.220451 02	.241385 02	.258294 02	.296788 02	.313097 02	.350472 02	.366338 02	.402956 02
7.0	.192288 02	.196777 02	.222054 02	.243213 02	.260178 02	.298775 02	.315124 02	.352585 02	.368535 02	.405218 02
7.1	.193950 02	.198476 02	.223522 02	.245047 02	.262055 02	.300755 02	.317144 02	.354691 02	.370675 02	.407432 02
7.2	.195608 02	.196170 02	.225334 02	.246869 02	.263925 02	.302727 02	.319157 02	.356789 02	.372807 02	.409638 02
7.3	.197260 02	.197859 02	.226660 02	.248685 02	.265770 02	.304693 02	.321162 02	.358879 02	.374932 02	.411816 02
7.4	.198908 02	.199543 02	.227432 02	.250496 02	.267649 02	.306652 02	.323161 02	.360963 02	.377048 02	.413926 02
7.5	.200552 02	.201224 02	.228338 02	.252311 02	.269501 02	.308605 02	.325153 02	.363039 02	.379158 02	.416028 02
7.6	.202191 02	.202897 02	.229089 02	.254100 02	.271348 02	.310552 02	.327138 02	.365107 02	.381260 02	.418183 02
7.7	.203825 02	.204567 02	.230395 02	.255894 02	.273190 02	.312492 02	.329117 02	.367170 02	.383356 02	.420351 02
7.8	.205455 02	.206232 02	.231636 02	.257683 02	.275035 02	.314426 02	.331093 02	.369225 02	.385444 02	.422510 02
7.9	.207083 02	.207893 02	.232833 02	.259466 02	.276886 02	.316354 02	.333057 02	.371274 02	.387525 02	.424663 02
8.0	.208713 02	.209550 02	.233745 02	.261245 02	.278690 02	.318276 02	.335017 02	.373316 02	.389610 02	.426809 02
8.1	.210341 02	.211222 02	.234452 02	.263016 02	.280510 02	.320193 02	.336972 02	.375352 02	.391669 02	.428948 02
8.2	.211955 02	.212850 02	.235155 02	.264787 02	.282315 02	.322104 02	.338923 02	.377381 02	.393731 02	.431080 02
8.3	.213565 02	.214494 02	.235853 02	.266551 02	.284124 02	.324009 02	.340863 02	.379405 02	.395786 02	.433206 02
8.4	.215171 02	.216134 02	.236547 02	.268310 02	.285929 02	.325909 02	.342811 02	.381422 02	.397836 02	.435325 02
8.5	.216773 02	.217770 02	.237237 02	.270065 02	.287729 02	.327803 02	.344732 02	.383434 02	.399879 02	.437439 02
8.6	.218372 02	.219402 02	.237933 02	.271815 02	.289524 02	.329693 02	.346653 02	.385440 02	.401917 02	.439544 02
8.7	.219967 02	.221033 02	.238634 02	.273561 02	.291310 02	.331577 02	.348580 02	.387440 02	.403939 02	.441645 02
8.8	.221558 02	.222655 02	.239331 02	.275302 02	.293110 02	.333456 02	.350496 02	.389434 02	.405974 02	.443739 02
8.9	.223145 02	.224276 02	.240012 02	.277133 02	.294881 02	.335330 02	.352446 02	.391423 02	.407995 02	.445827 02
9.0	.224711 02	.225894 02	.240625 02	.278972 02	.296668 02	.337199 02	.354312 02	.393407 02	.410009 02	.447913 02
9.1	.226282 02	.227517 02	.241291 02	.280750 02	.298431 02	.339064 02	.356212 02	.395385 02	.412018 02	.450000 02
9.2	.227870 02	.229128 02	.241953 02	.282525 02	.300199 02	.340924 02	.358118 02	.397358 02	.414022 02	.452057 02
9.3	.229465 02	.230755 02	.242611 02	.284345 02	.301963 02	.342779 02	.359999 02	.399325 02	.416021 02	.454122 02
9.4	.231061 02	.232388 02	.243264 02	.286162 02	.303733 02	.344629 02	.361885 02	.401288 02	.418014 02	.456182 02
9.5	.232655 02	.233995 02	.243912 02	.287975 02	.305498 02	.346475 02	.363767 02	.403246 02	.420002 02	.458243 02
9.6	.234250 02	.235605 02	.244554 02	.289784 02	.307258 02	.348317 02	.365644 02	.405198 02	.421985 02	.460306 02
9.7	.235845 02	.237219 02	.245193 02	.291589 02	.309012 02	.350154 02	.367516 02	.407146 02	.423953 02	.462371 02
9.8	.237441 02	.238835 02	.245836 02	.293390 02	.310762 02	.351987 02	.369384 02	.409089 02	.425917 02	.464438 02
9.9	.239037 02	.240457 02	.246482 02	.295193 02	.312562 02	.353816 02	.371247 02	.411028 02	.427895 02	.466502 02
10.0	.240634 02	.242071 02	.247112 02	.296993 02	.314360 02	.355640 02	.373117 02	.412962 02	.429869 02	.468563 02

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

[illegible]

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.00000	.00500	.01000	.02500	.05000	.10000	.20000	.30000	.40000	.50000	.60000	.70000	.80000	.90000	1.00000
17.00	3.46623	3.52071	3.57518	3.62964	3.68409	3.73854	3.79298	3.84742	3.90185	3.95627	4.01069	4.06510	4.11950	4.17389	4.22827
17.25	3.47400	3.52847	3.58293	3.63738	3.69182	3.74625	3.80067	3.85508	3.90948	3.96387	4.01825	4.07262	4.12698	4.18133	4.23567
17.50	3.48176	3.53622	3.59067	3.64511	3.69954	3.75396	3.80837	3.86277	3.91716	3.97153	4.02589	4.08024	4.13458	4.18891	4.24323
17.75	3.48951	3.54396	3.59840	3.65283	3.70725	3.76166	3.81606	3.87045	3.92483	3.97919	4.03354	4.08788	4.14220	4.19651	4.25081
18.00	3.49726	3.55170	3.60613	3.66055	3.71496	3.76936	3.82375	3.87813	3.93250	3.98686	4.04121	4.09554	4.14986	4.20417	4.25847
18.25	3.50500	3.55943	3.61385	3.66826	3.72266	3.77705	3.83143	3.88580	3.94016	3.99451	4.04885	4.10318	4.15750	4.21181	4.26611
18.50	3.51274	3.56716	3.62157	3.67597	3.73036	3.78474	3.83911	3.89347	3.94782	4.00216	4.05649	4.11081	4.16512	4.21942	4.27371
18.75	3.52048	3.57489	3.62929	3.68368	3.73806	3.79243	3.84679	3.90114	3.95548	4.00981	4.06413	4.11844	4.17274	4.22703	4.28131
19.00	3.52822	3.58262	3.63701	3.69139	3.74576	3.80012	3.85447	3.90881	3.96314	4.01746	4.07177	4.12607	4.18036	4.23464	4.28891
19.25	3.53596	3.59035	3.64473	3.69910	3.75346	3.80781	3.86215	3.91648	3.97080	4.02511	4.07941	4.13370	4.18798	4.24225	4.29651
19.50	3.54369	3.59807	3.65244	3.70680	3.76115	3.81549	3.86982	3.92414	3.97845	4.03275	4.08704	4.14132	4.19559	4.24985	4.30410
19.75	3.55143	3.60580	3.66016	3.71451	3.76885	3.82318	3.87750	3.93181	3.98611	4.04040	4.09468	4.14895	4.20321	4.25746	4.31170
20.00	3.55916	3.61352	3.66787	3.72221	3.77654	3.83086	3.88517	3.93947	3.99376	4.04804	4.10231	4.15657	4.21082	4.26506	4.31929
20.25	3.56689	3.62124	3.67558	3.72991	3.78423	3.83854	3.89284	3.94713	4.00141	4.05568	4.10994	4.16418	4.21841	4.27263	4.32685
20.50	3.57462	3.62896	3.68329	3.73761	3.79192	3.84622	3.90051	3.95478	4.00904	4.06329	4.11753	4.17175	4.22596	4.28016	4.33435
20.75	3.58235	3.63668	3.69100	3.74531	3.79961	3.85390	3.90818	3.96245	4.01671	4.07096	4.12520	4.17942	4.23363	4.28783	4.34202
21.00	3.59008	3.64440	3.69871	3.75301	3.80730	3.86158	3.91585	3.97011	4.02436	4.07860	4.13283	4.18705	4.24126	4.29546	4.34965
21.25	3.59781	3.65212	3.70642	3.76071	3.81500	3.86927	3.92353	3.97778	4.03202	4.08625	4.14047	4.19468	4.24888	4.30307	4.35725
21.50	3.60554	3.65984	3.71413	3.76841	3.82268	3.87694	3.93119	3.98543	4.03966	4.09388	4.14809	4.20229	4.25648	4.31066	4.36483
21.75	3.61327	3.66756	3.72184	3.77611	3.83037	3.88462	3.93886	3.99309	4.04731	4.10152	4.15572	4.20991	4.26409	4.31826	4.37242
22.00	3.62100	3.67528	3.72955	3.78381	3.83806	3.89230	3.94653	4.00075	4.05496	4.10916	4.16335	4.21753	4.27170	4.32586	4.38001
22.25	3.62873	3.68300	3.73726	3.79151	3.84575	3.90000	3.95423	4.00845	4.06266	4.11686	4.17105	4.22523	4.27940	4.33356	4.38771
22.50	3.63646	3.69072	3.74497	3.79921	3.85344	3.90767	3.96189	4.01610	4.07030	4.12449	4.17867	4.23284	4.28699	4.34114	4.39528
22.75	3.64419	3.69844	3.75268	3.80691	3.86113	3.91535	3.96956	4.02376	4.07795	4.13213	4.18630	4.24046	4.29461	4.34875	4.40288
23.00	3.65192	3.70616	3.76039	3.81461	3.86882	3.92303	3.97723	4.03142	4.08560	4.13977	4.19393	4.24808	4.30222	4.35635	4.41047
23.25	3.65965	3.71388	3.76810	3.82231	3.87651	3.93071	3.98490	4.03908	4.09325	4.14741	4.20156	4.25570	4.30983	4.36395	4.41806
23.50	3.66738	3.72160	3.77581	3.83001	3.88420	3.93839	3.99257	4.04674	4.10090	4.15505	4.20919	4.26332	4.31744	4.37155	4.42565
23.75	3.67511	3.72932	3.78352	3.83771	3.89189	3.94607	3.99924	4.05340	4.10755	4.16169	4.21582	4.26994	4.32405	4.37815	4.43224
24.00	3.68284	3.73704	3.79123	3.84541	3.89958	3.95375	3.99991	4.05406	4.10820	4.16233	4.21645	4.27056	4.32466	4.37875	4.43283
24.25	3.69057	3.74476	3.79894	3.85311	3.90727	3.96142	3.99957	4.05371	4.10784	4.16196	4.21607	4.27017	4.32426	4.37834	4.43241
24.50	3.69830	3.75248	3.80665	3.86081	3.91496	3.96910	4.02323	4.07735	4.13146	4.18556	4.23965	4.29373	4.34780	4.40186	4.45591
24.75	3.70603	3.76020	3.81436	3.86851	3.92265	3.97678	4.03090	4.08501	4.13911	4.19320	4.24728	4.30135	4.35541	4.40946	4.46350
25.00	3.71376	3.76792	3.82207	3.87621	3.93034	3.98446	4.03857	4.09267	4.14676	4.20083	4.25489	4.30894	4.36298	4.41701	4.47103
25.25	3.72149	3.77564	3.82978	3.88391	3.93803	3.99214	4.04624	4.10033	4.15441	4.20848	4.26254	4.31659	4.37063	4.42466	4.47868
25.50	3.72922	3.78336	3.83749	3.89161	3.94572	3.99982	4.05391	4.10799	4.16206	4.21612	4.27017	4.32421	4.37824	4.43226	4.48628
25.75	3.73695	3.79108	3.84520	3.89931	3.95341	3.99950	4.05358	4.10765	4.16171	4.21576	4.26980	4.32383	4.37785	4.43186	4.48587
26.00	3.74468	3.79880	3.85291	3.90701	3.96110	3.99918	4.05325	4.10731	4.16136	4.21540	4.26943	4.32345	4.37746	4.43146	4.48546
26.25	3.75241	3.80652	3.86062	3.91471	3.96879	4.02286	4.07692	4.13097	4.18501	4.23904	4.29306	4.34707	4.40107	4.45506	4.50904
26.50	3.76014	3.81424	3.86833	3.92241	3.97648	4.03054	4.08459	4.13863	4.19266	4.24668	4.30069	4.35469	4.40868	4.46266	4.51663
26.75	3.76787	3.82196	3.87604	3.93011	3.98417	4.03822	4.09226	4.14629	4.20031	4.25432	4.30832	4.36231	4.41629	4.47026	4.52422
27.00	3.77560	3.82968	3.88375	3.93781	3.99186	4.04590	4.09993	4.15395	4.20796	4.26196	4.31595	4.36993	4.42390	4.47786	4.53181
27.25	3.78333	3.83740	3.89146	3.94551	3.99955	4.05358	4.10760	4.16161	4.21561	4.26960	4.32358	4.37755	4.43151	4.48546	4.53941
27.50	3.79106	3.84512	3.89917	3.95321	3.99924	4.05326	4.10727	4.16127	4.21526	4.26924	4.32321	4.37717	4.43112	4.48506	4.53899
27.75	3.79879	3.85284	3.90688	3.96091	3.99993	4.05394	4.10794	4.16193	4.21591	4.26988	4.32384	4.37779	4.43173	4.48566	4.53958
28.00	3.80652	3.86056	3.91459	3.96861	4.02262	4.07662	4.13061	4.18458	4.23854	4.29249	4.34643	4.40036	4.45428	4.50819	4.56209

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.01	.02	.05	.10	.20	.50	1.00	2.00	5.00	10.00	20.00	50.00	100.00	200.00	500.00	1000.00	2000.00	5000.00	10000.00
27.50	4.67567	4.80889	4.94207	5.07521	5.20831	5.34139	5.47442	5.60742	5.74042	5.87342	6.00642	6.13942	6.27242	6.40542	6.53842	6.67142	6.80442	6.93742	7.07042
27.75	4.68112	4.81434	4.94756	5.08078	5.21399	5.34721	5.48042	5.61364	5.74686	5.88008	6.01330	6.14652	6.27974	6.41296	6.54618	6.67940	6.81262	6.94584	7.07906
28.00	4.68657	4.81979	4.95301	5.08623	5.21944	5.35266	5.48588	5.61910	5.75232	5.88554	6.01876	6.15198	6.28520	6.41842	6.55164	6.68486	6.81808	6.95130	7.08452
28.25	4.69202	4.82524	4.96000	5.09200	5.22500	5.35822	5.49144	5.62466	5.75788	5.89110	6.02432	6.15754	6.29076	6.42398	6.55720	6.69042	6.82364	6.95686	7.09008
28.50	4.69747	4.83069	4.96545	5.09745	5.23045	5.36367	5.49689	5.63011	5.76333	5.89655	6.02977	6.16299	6.29621	6.42943	6.56265	6.69587	6.82909	6.96231	7.09553
28.75	4.70292	4.83614	4.97090	5.10290	5.23590	5.36912	5.50234	5.63556	5.76878	5.90200	6.03522	6.16844	6.30166	6.43488	6.56810	6.70132	6.83454	6.96776	7.10098
29.00	4.70837	4.84159	4.97635	5.10835	5.24135	5.37457	5.50779	5.64101	5.77423	5.90745	6.04067	6.17389	6.30711	6.44033	6.57355	6.70677	6.83999	6.97321	7.10643
29.25	4.71382	4.84704	4.98180	5.11380	5.24680	5.38002	5.51324	5.64646	5.77968	5.91290	6.04612	6.17934	6.31256	6.44578	6.57900	6.71222	6.84544	6.97866	7.11188
29.50	4.71927	4.85249	4.98725	5.11925	5.25225	5.38567	5.51889	5.65211	5.78533	5.91855	6.05177	6.18499	6.31821	6.45143	6.58465	6.71787	6.85109	6.98431	7.11753
29.75	4.72472	4.85794	4.99270	5.12470	5.25770	5.39112	5.52434	5.65756	5.79078	5.92400	6.05722	6.19044	6.32366	6.45688	6.59010	6.72332	6.85654	6.98976	7.12308
30.00	4.73017	4.86339	4.99815	5.13015	5.26315	5.39667	5.52989	5.66311	5.79633	5.92955	6.06277	6.19599	6.32921	6.46243	6.59565	6.72887	6.86209	6.99531	7.12853
30.25	4.73562	4.86884	5.00360	5.13560	5.26860	5.40212	5.53534	5.66856	5.80178	5.93500	6.06822	6.20144	6.33466	6.46788	6.60110	6.73432	6.86754	6.99976	7.13408
30.50	4.74107	4.87429	5.00905	5.14105	5.27405	5.40757	5.54079	5.67401	5.80723	5.94045	6.07367	6.20689	6.34011	6.47333	6.60655	6.73977	6.87299	6.99976	7.13953
30.75	4.74652	4.87974	5.01450	5.14650	5.27950	5.41302	5.54624	5.67946	5.81268	5.94590	6.07912	6.21231	6.34553	6.47875	6.61197	6.74519	6.87841	6.99976	7.14508
31.00	4.75197	4.88519	5.01995	5.15195	5.28495	5.41847	5.55169	5.68491	5.81813	5.95135	6.08457	6.21776	6.35098	6.48420	6.61742	6.75064	6.88386	6.99976	7.15053
31.25	4.75742	4.89064	5.02540	5.15740	5.29040	5.42392	5.55714	5.69036	5.82358	5.95680	6.09002	6.22317	6.35639	6.48961	6.62283	6.75605	6.88927	6.99976	7.15608
31.50	4.76287	4.89609	5.03085	5.16285	5.29585	5.42937	5.56259	5.69581	5.82903	5.96225	6.09547	6.22858	6.36180	6.49502	6.62824	6.76146	6.89468	6.99976	7.16153
31.75	4.76832	4.90154	5.03630	5.16830	5.30130	5.43482	5.56804	5.70126	5.83448	5.96770	6.10092	6.23414	6.36736	6.50058	6.63380	6.76702	6.89976	6.99976	7.16708
32.00	4.77377	4.90699	5.04175	5.17375	5.30675	5.44027	5.57349	5.70671	5.83993	5.97315	6.10637	6.23959	6.37281	6.50603	6.63925	6.77247	6.90569	6.99976	7.17253
32.25	4.77922	4.91244	5.04720	5.17920	5.31220	5.44572	5.57894	5.71216	5.84538	5.97860	6.11182	6.24504	6.37826	6.51148	6.64470	6.77792	6.91114	6.99976	7.17808
32.50	4.78467	4.91789	5.05265	5.18465	5.31765	5.45117	5.58439	5.71761	5.85083	5.98405	6.11727	6.25049	6.38371	6.51693	6.65015	6.78337	6.91659	6.99976	7.18353
32.75	4.79012	4.92334	5.05810	5.19010	5.32310	5.45662	5.58984	5.72306	5.85628	5.98950	6.12272	6.25594	6.38916	6.52238	6.65560	6.78882	6.92204	6.99976	7.18908
33.00	4.79557	4.92879	5.06355	5.19555	5.32855	5.46207	5.59529	5.72851	5.86173	5.99495	6.12817	6.26139	6.39461	6.52783	6.66105	6.79427	6.92749	6.99976	7.19453
33.25	4.80102	4.93424	5.06900	5.20100	5.33400	5.46752	5.60074	5.73416	5.86738	5.99960	6.13359	6.26681	6.40003	6.53325	6.66647	6.79969	6.93291	6.99976	7.20008
33.50	4.80647	4.93969	5.07445	5.20645	5.33945	5.47297	5.60619	5.73961	5.87283	5.99960	6.13904	6.27226	6.40548	6.53870	6.67192	6.80514	6.93836	6.99976	7.20553
33.75	4.81192	4.94514	5.07990	5.21190	5.34490	5.47842	5.61164	5.74506	5.87828	5.99960	6.14449	6.27771	6.41315	6.54637	6.67959	6.81281	6.94603	6.99976	7.21108
34.00	4.81737	4.95059	5.08535	5.21735	5.35035	5.48387	5.61709	5.75053	5.88375	5.99960	6.14994	6.28316	6.42182	6.55504	6.68826	6.82148	6.95470	6.99976	7.21653
34.25	4.82282	4.95604	5.09080	5.22280	5.35580	5.48932	5.62254	5.75608	5.88930	5.99960	6.15539	6.28861	6.43727	6.57049	6.70371	6.83693	6.97015	6.99976	7.22208
34.50	4.82827	4.96149	5.09625	5.22825	5.36125	5.49477	5.62799	5.76153	5.89475	5.99960	6.16084	6.29406	6.44272	6.57594	6.70916	6.84238	6.97560	6.99976	7.22753
34.75	4.83372	4.96694	5.10170	5.23370	5.36670	5.50022	5.63344	5.76698	5.89970	5.99960	6.16629	6.29951	6.44807	6.58129	6.71451	6.84773	6.98095	6.99976	7.23308
35.00	4.83917	4.97239	5.10715	5.23915	5.37215	5.50567	5.63889	5.77243	5.90565	5.99960	6.17174	6.30496	6.45342	6.58664	6.71986	6.85308	6.98630	6.99976	7.23853
35.25	4.84462	4.97784	5.11260	5.24460	5.37760	5.51112	5.64434	5.77788	5.91110	5.99960	6.17719	6.31041	6.45987	6.59309	6.72631	6.85953	6.99275	6.99976	7.24408
35.50	4.85007	4.98329	5.11805	5.25005	5.38305	5.51657	5.64979	5.78333	5.91655	5.99960	6.18264	6.31586	6.46532	6.59854	6.73176	6.86498	6.99820	6.99976	7.24953
35.75	4.85552	4.98874	5.12350	5.25550	5.38850	5.52202	5.65524	5.78878	5.92196	5.99960	6.18809	6.32131	6.47077	6.60400	6.73721	6.87043	6.99820	6.99976	7.25508
36.00	4.86097	4.99419	5.12895	5.26095	5.39395	5.52747	5.66069	5.79423	5.92741	5.99960	6.19354	6.32676	6.47622	6.60945	6.74266	6.87588	6.99820	6.99976	7.26053
36.25	4.86642	5.00000	5.13440	5.26640	5.39940	5.53292	5.66614	5.79968	5.93289	5.99960	6.19899	6.33221	6.48167	6.61490	6.74811	6.88133	6.99820	6.99976	7.26608
36.50	4.87187	5.00545	5.13985	5.27185	5.40485	5.53837	5.67159	5.80503	5.93825	5.99960	6.20444	6.33766	6.48712	6.62035	6.75357	6.88679	6.99820	6.99976	7.27153
36.75	4.87732	5.01090	5.14530	5.27730	5.41030	5.54382	5.67704	5.81048	5.94370	5.99960	6.20989	6.34311	6.49256	6.62580	6.75902	6.89224	6.99820	6.99976	7.27708
37.00	4.88277	5.01635	5.15075	5.28275	5.41575	5.54927	5.68249	5.81593	5.94915	5.99960	6.21534	6.34856	6.49801	6.63125	6.76447	6.89769	6.99820	6.99976	7.28253
37.25	4.88822	5.02180	5.15620	5.28820	5.42120	5.55472	5.68794	5.82138	5.95457	5.99960	6.22079	6.35401	6.50346	6.63670	6.77092	6.90414	6.99820	6.99976	7.28808
37.50	4.89367	5.02725	5.16165	5.29365	5.42665	5.56017	5.69339	5.82683	5.96000	5.99960	6.22624	6.35946	6.50891	6.64215	6.77637	6.90959	6.99820	6.99976	7.29353
37.75	4.89912	5.03270	5.16710	5.29910	5.43210	5.56562	5.69884	5.83228	5.96541	5.99960	6.23169	6.36491	6.51436	6.64760	6.78182	6.91504	6.99820	6.99976	7.29908
38.00	4.90457	5.03815	5.17255	5.30455	5.43755	5.57107	5.70429	5.83773	5.97085	5.99960	6.23714	6.37036	6.51981	6.65305	6.78757	6.92079	6.99820	6.99976	7.30453
38.25	4.91002	5.04360	5.17800	5.31000	5.44300	5.57652	5.70974	5.84318	5.97627	5.99960	6.24259	6.37581	6.52526	6.65850	6.79302	6.92624	6.99820	6.99976	7.31008
38.50	4.91547	5.04905	5.18345	5.31545	5.44845	5.58197	5.71519	5.84863	5.98170	5.99960	6.24804	6.38126	6.53071	6.66395	6.79847	6.93169	6.99820	6.99976	7.31553
38.75	4.92092	5.05450	5.18890	5.32090	5.45390	5.58742	5.72064	5.85408	5.98715	5.99960	6.25349	6.38671	6.53616	6.66940	6.80392	6.93714	6.99820	6.99976	7.32108
39.00	4.92637	5.06000	5.19435	5.32635	5.45935	5.59287	5.72609	5.85953	5.99257	5.99960	6.25894	6.39216	6.54161	6.67485	6.80937	6.94269	6.99820	6.99976	7.32653
39.25	4.93182	5.06545	5.19980	5.33180	5.46480	5.59832	5.73154	5.86498	5.99802	5.99960	6.26439	6.39761	6.54706	6.68030	6.81482	6.94814	6.99820	6.99976	7.33208
39.50	4.93727	5.07090	5.20525	5.33725	5.47025	5.60377	5.73699	5.87043	5.99847	5.99960	6.26984	6.40306	6.55251	6.68575	6.82027	6.95369	6.99820	6.99976	7.33753
39.75	4.94272	5.07635	5.21070	5.34270	5.47570	5.60922	5.74244	5.87588	5.99892										

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

v	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.11	.12	.13	.14	.15	.16	.17	.18	.19	.20	.21	.22	.23	.24	.25	.26	.27	.28	.29	.30	.31	.32	.33	.34	.35	.36	.37	.38	.39	.40	.41	.42	.43	.44	.45	.46	.47	.48	.49	.50	.51	.52	.53	.54	.55	.56	.57	.58	.59	.60	.61	.62	.63	.64	.65	.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.77	.78	.79	.80	.81	.82	.83	.84	.85	.86	.87	.88	.89	.90	.91	.92	.93	.94	.95	.96	.97	.98	.99	1.00	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17	1.18	1.19	1.20	1.21	1.22	1.23	1.24	1.25	1.26	1.27	1.28	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.36	1.37	1.38	1.39	1.40	1.41	1.42	1.43	1.44	1.45	1.46	1.47	1.48	1.49	1.50	1.51	1.52	1.53	1.54	1.55	1.56	1.57	1.58	1.59	1.60	1.61	1.62	1.63	1.64	1.65	1.66	1.67	1.68	1.69	1.70	1.71	1.72	1.73	1.74	1.75	1.76	1.77	1.78	1.79	1.80	1.81	1.82	1.83	1.84	1.85	1.86	1.87	1.88	1.89	1.90	1.91	1.92	1.93	1.94	1.95	1.96	1.97	1.98	1.99	2.00	2.01	2.02	2.03	2.04	2.05	2.06	2.07	2.08	2.09	2.10	2.11	2.12	2.13	2.14	2.15	2.16	2.17	2.18	2.19	2.20	2.21	2.22	2.23	2.24	2.25	2.26	2.27	2.28	2.29	2.30	2.31	2.32	2.33	2.34	2.35	2.36	2.37	2.38	2.39	2.40	2.41	2.42	2.43	2.44	2.45	2.46	2.47	2.48	2.49	2.50	2.51	2.52	2.53	2.54	2.55	2.56	2.57	2.58	2.59	2.60	2.61	2.62	2.63	2.64	2.65	2.66	2.67	2.68	2.69	2.70	2.71	2.72	2.73	2.74	2.75	2.76	2.77	2.78	2.79	2.80	2.81	2.82	2.83	2.84	2.85	2.86	2.87	2.88	2.89	2.90	2.91	2.92	2.93	2.94	2.95	2.96	2.97	2.98	2.99	3.00	3.01	3.02	3.03	3.04	3.05	3.06	3.07	3.08	3.09	3.10	3.11	3.12	3.13	3.14	3.15	3.16	3.17	3.18	3.19	3.20	3.21	3.22	3.23	3.24	3.25	3.26	3.27	3.28	3.29	3.30	3.31	3.32	3.33	3.34	3.35	3.36	3.37	3.38	3.39	3.40	3.41	3.42	3.43	3.44	3.45	3.46	3.47	3.48	3.49	3.50	3.51	3.52	3.53	3.54	3.55	3.56	3.57	3.58	3.59	3.60	3.61	3.62	3.63	3.64	3.65	3.66	3.67	3.68	3.69	3.70	3.71	3.72	3.73	3.74	3.75	3.76	3.77	3.78	3.79	3.80	3.81	3.82	3.83	3.84	3.85	3.86	3.87	3.88	3.89	3.90	3.91	3.92	3.93	3.94	3.95	3.96	3.97	3.98	3.99	4.00	4.01	4.02	4.03	4.04	4.05	4.06	4.07	4.08	4.09	4.10	4.11	4.12	4.13	4.14	4.15	4.16	4.17	4.18	4.19	4.20	4.21	4.22	4.23	4.24	4.25	4.26	4.27	4.28	4.29	4.30	4.31	4.32	4.33	4.34	4.35	4.36	4.37	4.38	4.39	4.40	4.41	4.42	4.43	4.44	4.45	4.46	4.47	4.48	4.49	4.50	4.51	4.52	4.53	4.54	4.55	4.56	4.57	4.58	4.59	4.60	4.61	4.62	4.63	4.64	4.65	4.66	4.67	4.68	4.69	4.70	4.71	4.72	4.73	4.74	4.75	4.76	4.77	4.78	4.79	4.80	4.81	4.82	4.83	4.84	4.85	4.86	4.87	4.88	4.89	4.90	4.91	4.92	4.93	4.94	4.95	4.96	4.97	4.98	4.99	5.00	5.01	5.02	5.03	5.04	5.05	5.06	5.07	5.08	5.09	5.10	5.11	5.12	5.13	5.14	5.15	5.16	5.17	5.18	5.19	5.20	5.21	5.22	5.23	5.24	5.25	5.26	5.27	5.28	5.29	5.30	5.31	5.32	5.33	5.34	5.35	5.36	5.37	5.38	5.39	5.40	5.41	5.42	5.43	5.44	5.45	5.46	5.47	5.48	5.49	5.50	5.51	5.52	5.53	5.54	5.55	5.56	5.57	5.58	5.59	5.60	5.61	5.62	5.63	5.64	5.65	5.66	5.67	5.68	5.69	5.70	5.71	5.72	5.73	5.74	5.75	5.76	5.77	5.78	5.79	5.80	5.81	5.82	5.83	5.84	5.85	5.86	5.87	5.88	5.89	5.90	5.91	5.92	5.93	5.94	5.95	5.96	5.97	5.98	5.99	6.00	6.01	6.02	6.03	6.04	6.05	6.06	6.07	6.08	6.09	6.10	6.11	6.12	6.13	6.14	6.15	6.16	6.17	6.18	6.19	6.20	6.21	6.22	6.23	6.24	6.25	6.26	6.27	6.28	6.29	6.30	6.31	6.32	6.33	6.34	6.35	6.36	6.37	6.38	6.39	6.40	6.41	6.42	6.43	6.44	6.45	6.46	6.47	6.48	6.49	6.50	6.51	6.52	6.53	6.54	6.55	6.56	6.57	6.58	6.59	6.60	6.61	6.62	6.63	6.64	6.65	6.66	6.67	6.68	6.69	6.70	6.71	6.72	6.73	6.74	6.75	6.76	6.77	6.78	6.79	6.80	6.81	6.82	6.83	6.84	6.85	6.86	6.87	6.88	6.89	6.90	6.91	6.92	6.93	6.94	6.95	6.96	6.97	6.98	6.99	7.00	7.01	7.02	7.03	7.04	7.05	7.06	7.07	7.08	7.09	7.10	7.11	7.12	7.13	7.14	7.15	7.16	7.17	7.18	7.19	7.20	7.21	7.22	7.23	7.24	7.25	7.26	7.27	7.28	7.29	7.30	7.31	7.32	7.33	7.34	7.35	7.36	7.37	7.38	7.39	7.40	7.41	7.42	7.43	7.44	7.45	7.46	7.47	7.48	7.49	7.50	7.51	7.52	7.53	7.54	7.55	7.56	7.57	7.58	7.59	7.60	7.61	7.62	7.63	7.64	7.65	7.66	7.67	7.68	7.69	7.70	7.71	7.72	7.73	7.74	7.75	7.76	7.77	7.78	7.79	7.80	7.81	7.82	7.83	7.84	7.85	7.86	7.87	7.88	7.89	7.90	7.91	7.92	7.93	7.94	7.95	7.96	7.97	7.98	7.99	8.00	8.01	8.02	8.03	8.04	8.05	8.06	8.07	8.08	8.09	8.10	8.11	8.12	8.13	8.14	8.15	8.16	8.17	8.18	8.19	8.20	8.21	8.22	8.23	8.24	8.25	8.26	8.27	8.28	8.29	8.30	8.31	8.32	8.33	8.34	8.35	8.36	8.37	8.38	8.39	8.40	8.41	8.42	8.43	8.44	8.45	8.46	8.47	8.48	8.49	8.50	8.51	8.52	8.53	8.54	8.55	8.56	8.57	8.58	8.59	8.60	8.61	8.62	8.63	8.64	8.65	8.66	8.67	8.68	8.69	8.70	8.71	8.72	8.73	8.74	8.75	8.76	8.77	8.78	8.79	8.80	8.81	8.82	8.83	8.84	8.85	8.86	8.87	8.88	8.89	8.90	8.91	8.92	8.93	8.94	8.95	8.96	8.97	8.98	8.99	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	9.08	9.09	9.10	9.11	9.12	9.13	9.14	9.15	9.16	9.17	9.18	9.19	9.20	9.21	9.22	9.23	9.24	9.25	9.26	9.27	9.28	9.29	9.30	9.31	9.32	9.33	9.34	9.35	9.36	9.37	9.38	9.39	9.40	9.41	9.42	9.43	9.44	9.45	9.46	9.47	9.48	9.49	9.50	9.51	9.52	9.53	9.54	9.55	9.56	9.57	9.58	9.59	9.60	9.61	9.62	9.63	9.64	9.65	9.66	9.67	9.68	9.69	9.70	9.71	9.72	9.73	9.74	9.75	9.76	9.77	9.78	9.79	9.80	9.81	9.82	9.83	9.84	9.85	9.86	9.87	9.88	9.89	9.90	9.91	9.92	9.93	9.94	9.95	9.96	9.97	9.98	9.99	10.00	10.01	10.02	10.03	10.04	10.05	10.06	10.07	10.08	10.09	10.10	10.11	10.12	10.13	10.14	10.15	10.16	10.17	10.18	10.19	10.20	10.21	10.22	10.23	10.24	10.25	10.26	10.27	10.28	10.29	10.30	10.31	10.32	10.33	10.34	10.35	10.36	10.37	10.38	10.39	10.40	10.41	10.42	10.43	10.44	10.45	10.46	10.47	10.48	10.49	10.50	10.51	10.52	10.53	10.54	10.55	10.56	10.57	10.58	10.59	10.60	10.61	10.62	10.63	10.64	10.65	10.66	10.67	10.68	10.69	10.70	10.71	10.72	10.73	10.74	10.75	10.76	10.77	10.78	10.79	10.80	10.81	10.82	10.83	10.84	10.85	10.86	10.87	10.88	10.89	10.90	10.91	10.92	10.93	10.94	10.95	10.96	10.97	10.98	10.99	11.00	11.01	11.02	11.03	11.04	11.05	11.06	11.07	11.08	11.09	11.10	11.11	11.12	11.13	11.14	11.15	11.16	11.17	11.18	11.19	11.20	11.21	11.22	11.23	11.24	11.25	11.26	11.27	11.28	11.29	11.30	11.31	11.32	11.33	11.34	11.35	11.36	11.37	11.38	11.39	11.40	11.41	11.42	11.43	11.44	11.45	11.46	11.47	11.48	11.49	11.50	11.51	11.52	11.53	11.54	11.55	11.56	11.57	11.58	11.59	11.60	11.61	11.62	11.63	11.64	11.65	11.66	11.67	11.68	11.69	11.70	11.71	11.72	11.73	11.74	11.75	11.76	11.77	11.78	11.79	11.80	11.81	11.82	11.83	11.84	11.85	11.86	11.87	11.88	11.89	11.90	11.91	11.92	11.93	11.94	11.95	11.96	11.97	11.98	11.99	12.00	12.01	12.02	12.03	12.04	12.05	12.06	12.07	12.08	12.09	12.10	12.11	12.12	12.13	12.14	12.15	12.16	12.17	12.18	12.19	12.20	12.21	12.22	12.23	12.24	12.25	12.26	12.27	12.28	12.29	12.30	12.31	12.32	12.33	12.34	12.35	12.36	12.37	12.38	12.39	12.40	12.41	12.42	12.43	12.44	12.45	12.46	12.47	12.48	12.49	12.50	12.51	12.52	12.53	12.54	12.55	12.56	12.57	12.58	12.59	12.60	12.61	12.62	12.63	12.64	12.65	12.66	12.67	12.68	12.69	12.70	12.71	12.72	12.73	12.74	12.75	12.76	12.77	12.78	12.79	12.80	12.81	12.82	12.83	12.84	12.85	12.86	12.87	12.88	12.89	12.90	12.91	12.92	12.93	12.94	12.95	12.96	12.97	12.98	12.99	13.00	13.01	13.02	13.03	13.04	13.05	13.06	13.07	13.08	13.09	13.10	13.11	13.12	13.13	13.14	13.15	13.16	13.17	13.18	13.19	13.20	13.21	13.22	13.23	13.24	13.25	13.26	13.27	13.28	13.29	13.30	13.31	13.32	13.33	13.34	13.35	13.36	13.37	13.38	13.39	13.40	13.41	13.42	13.43	13.44	13.45	13.46
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Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

χ^2/Q	.00500	.01000	.02000	.05000	.10000	.20000	.50000	1.00000	2.00000	5.00000	10.00000	20.00000	50.00000	100.00000
87.5	.122926	.123315	.123703	.124090	.124475	.124858	.125239	.125618	.125993	.126364	.126731	.127093	.127450	.127803
88.0	.123516	.123903	.124289	.124672	.125052	.125429	.125803	.126174	.126541	.126904	.127263	.127617	.127966	.128311
88.5	.124100	.124486	.124869	.125248	.125623	.125994	.126360	.126722	.127080	.127433	.127781	.128124	.128462	.128795
89.0	.124681	.125066	.125447	.125824	.126196	.126563	.126925	.127282	.127634	.127981	.128323	.128660	.128991	.129316
89.5	.125259	.125642	.126021	.126395	.126764	.127128	.127487	.127841	.128190	.128534	.128873	.129207	.129535	.129858
90.0	.125833	.126214	.126590	.126961	.127327	.127688	.128044	.128395	.128741	.129082	.129418	.129749	.130074	.130394
90.5	.126404	.126783	.127157	.127526	.127890	.128249	.128603	.128952	.129296	.129635	.129969	.130298	.130621	.130938
91.0	.126971	.127348	.127719	.128085	.128446	.128801	.129150	.129494	.129833	.130167	.130496	.130820	.131138	.131450
91.5	.127534	.127909	.128277	.128639	.129000	.129355	.129704	.130048	.130387	.130721	.131050	.131374	.131692	.132004
92.0	.128093	.128466	.128831	.129189	.129541	.129887	.130228	.130564	.130895	.131221	.131542	.131858	.132168	.132472
92.5	.128648	.129019	.129381	.129736	.130084	.130426	.130762	.131092	.131417	.131737	.132052	.132362	.132666	.132964
93.0	.129200	.129569	.129929	.130282	.130628	.130967	.131300	.131627	.131948	.132263	.132572	.132876	.133174	.133466
93.5	.129748	.130115	.130473	.130824	.131168	.131505	.131836	.132161	.132480	.132793	.133100	.133401	.133696	.133984
94.0	.130292	.130656	.131011	.131359	.131700	.132034	.132361	.132682	.132997	.133305	.133607	.133902	.134191	.134473
94.5	.130832	.131193	.131545	.131890	.132228	.132559	.132883	.133201	.133512	.133816	.134113	.134403	.134686	.134962
95.0	.131368	.131726	.132075	.132417	.132752	.133080	.133401	.133715	.134022	.134322	.134615	.134901	.135180	.135452
95.5	.131900	.132255	.132601	.132939	.133270	.133594	.133911	.134221	.134524	.134820	.135109	.135391	.135665	.135932
96.0	.132428	.132780	.133128	.133469	.133803	.134130	.134450	.134763	.135069	.135368	.135659	.135942	.136218	.136486
96.5	.132952	.133301	.133641	.133973	.134298	.134616	.134927	.135231	.135528	.135818	.136101	.136376	.136643	.136902
97.0	.133471	.133817	.134154	.134483	.134805	.135119	.135426	.135726	.136018	.136303	.136580	.136849	.137110	.137363
97.5	.133986	.134329	.134662	.134987	.135304	.135613	.135914	.136207	.136492	.136769	.137038	.137298	.137550	.137793
98.0	.134497	.134837	.135168	.135490	.135804	.136110	.136408	.136698	.136979	.137252	.137516	.137771	.138027	.138274
98.5	.135003	.135340	.135668	.135987	.136298	.136600	.136893	.137177	.137452	.137718	.137975	.138223	.138462	.138692
99.0	.135505	.135839	.136163	.136478	.136784	.137081	.137369	.137648	.137918	.138179	.138431	.138674	.138908	.139133
99.5	.136003	.136334	.136655	.136967	.137270	.137564	.137849	.138124	.138390	.138646	.138892	.139129	.139356	.139573
100.0	.136497	.136824	.137139	.137444	.137739	.138025	.138301	.138567	.138823	.139070	.139307	.139534	.139751	.139958
100.5	.136987	.137310	.137621	.137919	.138206	.138482	.138748	.139004	.139250	.139486	.139712	.139928	.140135	.140332
101.0	.137473	.137792	.138100	.138397	.138683	.138958	.139223	.139478	.139723	.139958	.140183	.140398	.140604	.140799
101.5	.137955	.138269	.138571	.138862	.139142	.139411	.139670	.139918	.140155	.140381	.140597	.140803	.140999	.141185
102.0	.138433	.138743	.139041	.139328	.139604	.139870	.140126	.140371	.140605	.140828	.141041	.141244	.141437	.141620
102.5	.138907	.139213	.139508	.139792	.140065	.140327	.140579	.140820	.141050	.141269	.141477	.141674	.141860	.142035
103.0	.139377	.139679	.139969	.140248	.140516	.140773	.141019	.141254	.141478	.141691	.141893	.142085	.142267	.142439
103.5	.139843	.140141	.140428	.140704	.140969	.141223	.141466	.141698	.141919	.142129	.142328	.142516	.142693	.142859
104.0	.140305	.140599	.140881	.141152	.141411	.141658	.141893	.142116	.142327	.142527	.142715	.142892	.143058	.143213
104.5	.140763	.141053	.141332	.141600	.141856	.142100	.142332	.142553	.142763	.142961	.143148	.143324	.143489	.143643
105.0	.141217	.141503	.141778	.142041	.142292	.142531	.142758	.142973	.143177	.143369	.143550	.143720	.143879	.144027
105.5	.141667	.141949	.142218	.142475	.142719	.142950	.143168	.143373	.143566	.143747	.143917	.144076	.144224	.144361
106.0	.142113	.142391	.142656	.142908	.143148	.143375	.143589	.143790	.143979	.144156	.144321	.144475	.144618	.144750
106.5	.142555	.142829	.143089	.143336	.143570	.143791	.143998	.144192	.144373	.144541	.144696	.144839	.144971	.145092
107.0	.143000	.143269	.143523	.143763	.143989	.144201	.144399	.144583	.144753	.144910	.145054	.145186	.145307	.145417
107.5	.143441	.143705	.143954	.144189	.144409	.144615	.144807	.144985	.145149	.145300	.145439	.145566	.145681	.145784
108.0	.143878	.144137	.144381	.144610	.144824	.145024	.145210	.145382	.145540	.145684	.145815	.145934	.146041	.146136
108.5	.144311	.144566	.144805	.145029	.145238	.145432	.145611	.145775	.145925	.146061	.146183	.146292	.146389	.146473
109.0	.144740	.144991	.145226	.145445	.145649	.145838	.146012	.146171	.146316	.146447	.146564	.146668	.146759	.146836
109.5	.145165	.145412	.145643	.145858	.146057	.146241	.146410	.146564	.146704	.146830	.146943	.147044	.147133	.147209
110.0	.145587	.145830	.146056	.146266	.146460	.146639	.146803	.146952	.147087	.147208	.147316	.147411	.147493	.147562
110.5	.146006	.146245	.146468	.146676	.146868	.147044	.147205	.147351	.147482	.147598	.147699	.147786	.147859	.147918
111.0	.146421	.146656	.146874	.147076	.147261	.147429	.147581	.147717	.147838	.147944	.148035	.148111	.148173	.148221
111.5	.146833	.147064	.147276	.147471	.147649	.147810	.147953	.148080	.148191	.148286	.148365	.148429	.148478	.148513
112.0	.147242	.147468	.147674	.147862	.148032	.148184	.148319	.148437	.148539	.148625	.148696	.148751	.148791	.148817

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

$\nu \backslash Q$	.005000	.002500	.001000	.000500	.000100	.000050	.000010	.000005	.000001
112.5	.152238 03	.159201 03	.164590 03	.168486 03	.177001 03	.180486 03	.188242 03	.191457 03	.198679 03
113.0	.152820 03	.159794 03	.165201 03	.169096 03	.177624 03	.181115 03	.188883 03	.192103 03	.199337 03
113.5	.153400 03	.160388 03	.165804 03	.169705 03	.178248 03	.181744 03	.189524 03	.192749 03	.199994 03
114.0	.153981 03	.160981 03	.166406 03	.170314 03	.178871 03	.182373 03	.190165 03	.193395 03	.200650 03
114.5	.154562 03	.161573 03	.167008 03	.170922 03	.179493 03	.183001 03	.190805 03	.194040 03	.201307 03
115.0	.155142 03	.162166 03	.167610 03	.171531 03	.180116 03	.183629 03	.191446 03	.194685 03	.201963 03
115.5	.155722 03	.162759 03	.168212 03	.172139 03	.180738 03	.184257 03	.192085 03	.195338 03	.202618 03
116.0	.156302 03	.163351 03	.168813 03	.172747 03	.181360 03	.184884 03	.192725 03	.195975 03	.203274 03
116.5	.156882 03	.163943 03	.169415 03	.173355 03	.181982 03	.185512 03	.193364 03	.196619 03	.203929 03
117.0	.157462 03	.164535 03	.170016 03	.173962 03	.182603 03	.186139 03	.194003 03	.197263 03	.204583 03
117.5	.158041 03	.165126 03	.170616 03	.174570 03	.183224 03	.186765 03	.194642 03	.197906 03	.205238 03
118.0	.158620 03	.165710 03	.171217 03	.175177 03	.183845 03	.187392 03	.195280 03	.198550 03	.205892 03
118.5	.159202 03	.166309 03	.171817 03	.175784 03	.184466 03	.188018 03	.195918 03	.199193 03	.206545 03
119.0	.159779 03	.166900 03	.172418 03	.176390 03	.185086 03	.188644 03	.196556 03	.199835 03	.207199 03
119.5	.160357 03	.167491 03	.173018 03	.176997 03	.185706 03	.189269 03	.197194 03	.200478 03	.207852 03
120.0	.160936 03	.168082 03	.173617 03	.177603 03	.186326 03	.189895 03	.197831 03	.201120 03	.208504 03
120.5	.161514 03	.168672 03	.174217 03	.178209 03	.186946 03	.190520 03	.198468 03	.201762 03	.209157 03
121.0	.162093 03	.169263 03	.174816 03	.178815 03	.187565 03	.191145 03	.199105 03	.202403 03	.209809 03
121.5	.162671 03	.169853 03	.175416 03	.179420 03	.188184 03	.191769 03	.199741 03	.203044 03	.210461 03
122.0	.163249 03	.170443 03	.176214 03	.180225 03	.189003 03	.192593 03	.200577 03	.203885 03	.211112 03
122.5	.163827 03	.171032 03	.176813 03	.180831 03	.189622 03	.193217 03	.201203 03	.204526 03	.211763 03
123.0	.164404 03	.171622 03	.177412 03	.181435 03	.190240 03	.193841 03	.201829 03	.205166 03	.212414 03
123.5	.164982 03	.172211 03	.178010 03	.182040 03	.190858 03	.194465 03	.202454 03	.205798 03	.213065 03
124.0	.165559 03	.173301 03	.179106 03	.183145 03	.192076 03	.195688 03	.203676 03	.207026 03	.213715 03
124.5	.166137 03	.173890 03	.179706 03	.183749 03	.192784 03	.196401 03	.204389 03	.207744 03	.214365 03
125.0	.166714 03	.174471 03	.180293 03	.184340 03	.193481 03	.197103 03	.205091 03	.208451 03	.215015 03
125.5	.167290 03	.175057 03	.180883 03	.184934 03	.194179 03	.197806 03	.205796 03	.209164 03	.215664 03
126.0	.167867 03	.175634 03	.181463 03	.185518 03	.194822 03	.198454 03	.206445 03	.209818 03	.216513 03
126.5	.168444 03	.176211 03	.182043 03	.186103 03	.195432 03	.199069 03	.207062 03	.210431 03	.217182 03
127.0	.169020 03	.176788 03	.182623 03	.186687 03	.196022 03	.199663 03	.207656 03	.211029 03	.217780 03
127.5	.169597 03	.177377 03	.183215 03	.187283 03	.196622 03	.200267 03	.208260 03	.211639 03	.218391 03
128.0	.170173 03	.178157 03	.184000 03	.188073 03	.197422 03	.201071 03	.209064 03	.212441 03	.219194 03
128.5	.170749 03	.178833 03	.184680 03	.188758 03	.198112 03	.201765 03	.209758 03	.213133 03	.219886 03
129.0	.171325 03	.179509 03	.185360 03	.189443 03	.198803 03	.202460 03	.210453 03	.213849 03	.220601 03
129.5	.171901 03	.180185 03	.186040 03	.190128 03	.199484 03	.203144 03	.211137 03	.214533 03	.221353 03
130.0	.172476 03	.180859 03	.186718 03	.190811 03	.200164 03	.203828 03	.211821 03	.215217 03	.222103 03
130.5	.173051 03	.181434 03	.187297 03	.191385 03	.200734 03	.204401 03	.212394 03	.215790 03	.222849 03
131.0	.173626 03	.182013 03	.187880 03	.191973 03	.201318 03	.205088 03	.213081 03	.216477 03	.223594 03
131.5	.174202 03	.182589 03	.188460 03	.192557 03	.201900 03	.205674 03	.213667 03	.217063 03	.224339 03
132.0	.174777 03	.183164 03	.189040 03	.193137 03	.202476 03	.206254 03	.214247 03	.217643 03	.225084 03
132.5	.175351 03	.183738 03	.189618 03	.193719 03	.203054 03	.206836 03	.214827 03	.218223 03	.225829 03
133.0	.175926 03	.184315 03	.190198 03	.194283 03	.203614 03	.207400 03	.215391 03	.218787 03	.226574 03
133.5	.176500 03	.185093 03	.190980 03	.195068 03	.204394 03	.208184 03	.216175 03	.219571 03	.227319 03
134.0	.177074 03	.185667 03	.191558 03	.195650 03	.204976 03	.208770 03	.216761 03	.220157 03	.228064 03
134.5	.177648 03	.186249 03	.192144 03	.196240 03	.205564 03	.209362 03	.217353 03	.220749 03	.228709 03
135.0	.178223 03	.186823 03	.192722 03	.196823 03	.206114 03	.209916 03	.217907 03	.221303 03	.229108 03
135.5	.178797 03	.187397 03	.193299 03	.197403 03	.206690 03	.210496 03	.218487 03	.221883 03	.229693 03
136.0	.179371 03	.187972 03	.193877 03	.197983 03	.207264 03	.211074 03	.219065 03	.222461 03	.230256 03
136.5	.179945 03	.188547 03	.194455 03	.198563 03	.207840 03	.211654 03	.219635 03	.223031 03	.230826 03
137.0	.180519 03	.189122 03	.195033 03	.199143 03	.208414 03	.212232 03	.220213 03	.223609 03	.231404 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	0.00500	0.05000	0.01000	0.00500	0.00100	0.00050	0.00010	0.00005	0.00001
137.5	.181092 03	.183960 03	.194407 03	.198589 03	.207875 03	.211629 03	.219960 03	.223420 03	.231164 03
138.0	.181665 03	.184538 03	.195080 03	.199269 03	.208487 03	.212246 03	.220596 03	.224052 03	.231807 03
138.5	.182239 03	.185115 03	.195657 03	.199847 03	.209099 03	.212862 03	.221223 03	.224684 03	.232449 03
139.0	.182812 03	.185693 03	.196235 03	.200426 03	.209710 03	.213479 03	.221851 03	.225316 03	.233091 03
139.5	.183385 03	.186270 03	.196812 03	.201004 03	.210321 03	.214095 03	.222478 03	.225948 03	.233733 03
140.0	.183957 03	.186847 03	.197384 03	.201583 03	.210932 03	.214711 03	.223105 03	.226580 03	.234374 03
140.5	.184530 03	.187424 03	.197943 03	.202181 03	.211543 03	.215327 03	.223732 03	.227211 03	.235015 03
141.0	.185103 03	.188001 03	.198515 03	.202779 03	.212154 03	.215943 03	.224359 03	.227842 03	.235656 03
141.5	.185675 03	.188577 03	.199087 03	.203377 03	.212764 03	.216558 03	.224985 03	.228473 03	.236297 03
142.0	.186247 03	.189154 03	.199659 03	.203974 03	.213374 03	.217173 03	.225612 03	.229104 03	.236937 03
142.5	.186819 03	.189730 03	.200220 03	.204572 03	.213984 03	.217780 03	.226238 03	.229734 03	.237578 03
143.0	.187391 03	.190306 03	.200789 03	.205269 03	.214594 03	.218403 03	.226863 03	.230365 03	.238218 03
143.5	.187963 03	.190882 03	.201382 03	.205866 03	.215204 03	.219018 03	.227469 03	.230985 03	.238857 03
144.0	.188535 03	.191458 03	.201984 03	.206463 03	.215813 03	.219632 03	.228114 03	.231624 03	.239497 03
144.5	.189107 03	.192034 03	.202587 03	.207060 03	.216422 03	.220247 03	.228739 03	.232254 03	.240136 03
145.0	.189678 03	.192610 03	.203187 03	.207656 03	.217032 03	.220861 03	.229364 03	.232883 03	.240775 03
145.5	.190250 03	.193186 03	.203760 03	.208225 03	.217640 03	.221475 03	.229989 03	.233512 03	.241414 03
146.0	.190821 03	.193761 03	.204347 03	.208809 03	.218249 03	.222088 03	.230613 03	.234141 03	.242052 03
146.5	.191392 03	.194336 03	.204937 03	.209394 03	.218858 03	.222702 03	.231238 03	.234770 03	.242691 03
147.0	.191963 03	.194912 03	.205527 03	.210045 03	.219466 03	.223315 03	.231862 03	.235398 03	.243329 03
147.5	.192534 03	.195487 03	.206117 03	.210637 03	.220074 03	.223928 03	.232486 03	.236026 03	.243967 03
148.0	.193105 03	.196062 03	.206697 03	.211223 03	.220682 03	.224541 03	.233109 03	.236654 03	.244604 03
148.5	.193675 03	.196636 03	.207296 03	.211828 03	.221290 03	.225154 03	.233733 03	.237282 03	.245242 03
149.0	.194246 03	.197211 03	.207906 03	.212423 03	.221897 03	.225766 03	.234356 03	.237910 03	.245879 03
149.5	.194816 03	.197786 03	.208503 03	.213046 03	.222505 03	.226378 03	.234979 03	.238537 03	.246516 03
150.0	.195387 03	.198360 03	.209125 03	.213613 03	.223112 03	.226991 03	.235602 03	.239164 03	.247153 03
150.5	.195957 03	.198935 03	.209854 03	.214193 03	.223719 03	.227603 03	.236224 03	.239791 03	.247789 03
151.0	.196527 03	.199509 03	.210443 03	.214793 03	.224326 03	.228214 03	.236847 03	.240418 03	.248425 03
151.5	.197097 03	.200083 03	.211031 03	.215397 03	.224933 03	.228826 03	.237469 03	.241045 03	.249061 03
152.0	.197667 03	.200657 03	.211620 03	.215992 03	.225539 03	.229437 03	.238091 03	.241671 03	.249697 03
152.5	.198237 03	.201231 03	.212209 03	.216586 03	.226146 03	.230049 03	.238713 03	.242297 03	.250333 03
153.0	.198806 03	.201804 03	.212797 03	.217180 03	.226752 03	.230660 03	.239334 03	.242923 03	.250968 03
153.5	.199376 03	.202376 03	.213385 03	.217774 03	.227358 03	.231270 03	.239956 03	.243549 03	.251603 03
154.0	.199945 03	.202951 03	.213973 03	.218368 03	.227964 03	.231881 03	.240577 03	.244174 03	.252238 03
154.5	.200514 03	.203525 03	.214561 03	.218961 03	.228569 03	.232492 03	.241198 03	.244799 03	.252873 03
155.0	.201084 03	.204098 03	.215149 03	.219555 03	.229175 03	.233102 03	.241819 03	.245424 03	.253507 03
155.5	.201653 03	.204671 03	.215736 03	.220148 03	.229780 03	.233712 03	.242440 03	.246049 03	.254142 03
156.0	.202222 03	.205244 03	.216324 03	.220741 03	.230385 03	.234322 03	.243061 03	.246674 03	.254776 03
156.5	.202790 03	.205817 03	.216911 03	.221334 03	.230990 03	.234932 03	.243680 03	.247299 03	.255410 03
157.0	.203359 03	.206390 03	.217499 03	.221927 03	.231595 03	.235542 03	.244300 03	.247923 03	.256043 03
157.5	.203928 03	.206962 03	.218086 03	.222519 03	.232200 03	.236151 03	.244920 03	.248547 03	.256677 03
158.0	.204496 03	.207535 03	.218673 03	.223112 03	.232804 03	.236760 03	.245540 03	.249171 03	.257310 03
158.5	.205065 03	.208107 03	.219259 03	.223704 03	.233409 03	.237369 03	.246159 03	.249795 03	.257943 03
159.0	.205633 03	.208679 03	.219846 03	.224297 03	.234013 03	.237979 03	.246779 03	.250418 03	.258576 03
159.5	.206201 03	.209252 03	.220433 03	.224889 03	.234617 03	.238587 03	.247398 03	.251041 03	.259208 03
160.0	.206769 03	.209824 03	.221019 03	.225461 03	.235221 03	.239196 03	.248017 03	.251665 03	.259841 03
160.5	.207337 03	.210396 03	.221605 03	.225983 03	.235824 03	.239804 03	.248635 03	.252287 03	.260473 03
161.0	.207905 03	.210968 03	.222191 03	.226564 03	.236428 03	.240412 03	.249254 03	.252916 03	.261105 03
161.5	.208473 03	.211539 03	.222777 03	.227144 03	.237031 03	.241025 03	.249872 03	.253533 03	.261737 03
162.0	.209040 03	.212111 03	.223363 03	.227747 03	.237634 03	.241628 03	.250491 03	.254155 03	.262368 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

	.007500	.005000	.002500	.001000	.000500	.000100	.000010	.000005	.000001
162.5	.209608 03	.212683 03	.217700 03	.223943 03	.228438 03	.238237 03	.251109 03	.254777 03	.263000 03
163.0	.210175 03	.213250 03	.218277 03	.224535 03	.229030 03	.238840 03	.251726 03	.255399 03	.263631 03
163.5	.210743 03	.213825 03	.218855 03	.225120 03	.229626 03	.239443 03	.252344 03	.256021 03	.264262 03
164.0	.211310 03	.214396 03	.219433 03	.225705 03	.230211 03	.240046 03	.252962 03	.256643 03	.264892 03
164.5	.211877 03	.214968 03	.220010 03	.226291 03	.230802 03	.240668 03	.253579 03	.257264 03	.265523 03
165.0	.212444 03	.215539 03	.220587 03	.226876 03	.231393 03	.241250 03	.254196 03	.257885 03	.266153 03
165.5	.213011 03	.216109 03	.221165 03	.227461 03	.231983 03	.241852 03	.254813 03	.258507 03	.266784 03
166.0	.213578 03	.216680 03	.221742 03	.228045 03	.232573 03	.242454 03	.255430 03	.259127 03	.267414 03
166.5	.214145 03	.217251 03	.222319 03	.228630 03	.233163 03	.243056 03	.256046 03	.259748 03	.268043 03
167.0	.214711 03	.217821 03	.222895 03	.229215 03	.233753 03	.243658 03	.256663 03	.260369 03	.268673 03
167.5	.215278 03	.218392 03	.223472 03	.229799 03	.234343 03	.244259 03	.257279 03	.260989 03	.269302 03
168.0	.215844 03	.218962 03	.224049 03	.230383 03	.234933 03	.244861 03	.257895 03	.261609 03	.269932 03
168.5	.216411 03	.219532 03	.224625 03	.230968 03	.235523 03	.245462 03	.258511 03	.262229 03	.270561 03
169.0	.216977 03	.220102 03	.225202 03	.231552 03	.236112 03	.246063 03	.259127 03	.262849 03	.271190 03
169.5	.217543 03	.220673 03	.225778 03	.232135 03	.236701 03	.246664 03	.259742 03	.263469 03	.271818 03
170.0	.218109 03	.221244 03	.226354 03	.232719 03	.237291 03	.247265 03	.260358 03	.264088 03	.272447 03
170.5	.218675 03	.221814 03	.226930 03	.233303 03	.237880 03	.247865 03	.260973 03	.264708 03	.273075 03
171.0	.219241 03	.222382 03	.227506 03	.233887 03	.238469 03	.248466 03	.261588 03	.265327 03	.273703 03
171.5	.219807 03	.222952 03	.228082 03	.234470 03	.239058 03	.249066 03	.262203 03	.265946 03	.274331 03
172.0	.220372 03	.223521 03	.228658 03	.235053 03	.239646 03	.249666 03	.262818 03	.266564 03	.274959 03
172.5	.220938 03	.224090 03	.229233 03	.235637 03	.240235 03	.250266 03	.263432 03	.267183 03	.275586 03
173.0	.221503 03	.224660 03	.229809 03	.236220 03	.240823 03	.250866 03	.264047 03	.267801 03	.276214 03
173.5	.222069 03	.225239 03	.230384 03	.236983 03	.241542 03	.251566 03	.264661 03	.268420 03	.276841 03
174.0	.222634 03	.225808 03	.230959 03	.237658 03	.242200 03	.252265 03	.265275 03	.269030 03	.277468 03
174.5	.223199 03	.226377 03	.231535 03	.238283 03	.242825 03	.252889 03	.265889 03	.269656 03	.278094 03
175.0	.223764 03	.226946 03	.232110 03	.238851 03	.243393 03	.253464 03	.266502 03	.270273 03	.278721 03
175.5	.224329 03	.227515 03	.232865 03	.239603 03	.244145 03	.254226 03	.267116 03	.270891 03	.279348 03
176.0	.224894 03	.228084 03	.233420 03	.240153 03	.244705 03	.254792 03	.267729 03	.271508 03	.279974 03
176.5	.225459 03	.228652 03	.233983 03	.240716 03	.245278 03	.255373 03	.268343 03	.272126 03	.280600 03
177.0	.226024 03	.229221 03	.234549 03	.241280 03	.245842 03	.255946 03	.268956 03	.272743 03	.281226 03
177.5	.226588 03	.229789 03	.235113 03	.241811 03	.246413 03	.256528 03	.269569 03	.273360 03	.281852 03
178.0	.227153 03	.230360 03	.235685 03	.242344 03	.246956 03	.257087 03	.270182 03	.273977 03	.282477 03
178.5	.227717 03	.230926 03	.236312 03	.242875 03	.247487 03	.257630 03	.270794 03	.274593 03	.283102 03
179.0	.228282 03	.231494 03	.236806 03	.243407 03	.248020 03	.258174 03	.271407 03	.275210 03	.283728 03
179.5	.228846 03	.232052 03	.237321 03	.243938 03	.248551 03	.258715 03	.272019 03	.275826 03	.284353 03
180.0	.229410 03	.232620 03	.237885 03	.244469 03	.249083 03	.259257 03	.272631 03	.276442 03	.284978 03
180.5	.229974 03	.233188 03	.238459 03	.244995 03	.249609 03	.259792 03	.273243 03	.277058 03	.285602 03
181.0	.230538 03	.233755 03	.239022 03	.245533 03	.250147 03	.260340 03	.273855 03	.277674 03	.286227 03
181.5	.231102 03	.234323 03	.239576 03	.246114 03	.250728 03	.260942 03	.274467 03	.278289 03	.286851 03
182.0	.231665 03	.234881 03	.240150 03	.246695 03	.251309 03	.261500 03	.275078 03	.278905 03	.287475 03
182.5	.232230 03	.235456 03	.240723 03	.247276 03	.251890 03	.262087 03	.275690 03	.279520 03	.288099 03
183.0	.232793 03	.236026 03	.241297 03	.247857 03	.252470 03	.262834 03	.276301 03	.280135 03	.288723 03
183.5	.233357 03	.236593 03	.241870 03	.248437 03	.253052 03	.263431 03	.276912 03	.280750 03	.289347 03
184.0	.233920 03	.237160 03	.242483 03	.249058 03	.253673 03	.264028 03	.277523 03	.281365 03	.289970 03
184.5	.234484 03	.237727 03	.243016 03	.249598 03	.254213 03	.264624 03	.278134 03	.281980 03	.290594 03
185.0	.235047 03	.238294 03	.243559 03	.250149 03	.254764 03	.265221 03	.278744 03	.282595 03	.291217 03
185.5	.235610 03	.238861 03	.244162 03	.250759 03	.255374 03	.265817 03	.279355 03	.283209 03	.291840 03
186.0	.236173 03	.239428 03	.244735 03	.251339 03	.255954 03	.266414 03	.279965 03	.283823 03	.292463 03
186.5	.236736 03	.239995 03	.245308 03	.251919 03	.256534 03	.267010 03	.280575 03	.284437 03	.293085 03
187.0	.237299 03	.240551 03	.245880 03	.252499 03	.257114 03	.267606 03	.281185 03	.285051 03	.293708 03

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

r/Q	.007500	.005000	.002500	.001000	.000500	.000100	.000050	.000010	.000005	.000001
187.5	.237862 03	.241128 03	.246453 03	.253079 03	.257835 03	.268202 03	.272428 03	.281795 03	.285665 03	.294330 03
188.0	.238425 03	.241694 03	.247025 03	.253659 03	.258419 03	.268798 03	.273028 03	.282405 03	.286279 03	.294952 03
188.5	.238988 03	.242261 03	.247598 03	.254238 03	.259004 03	.269393 03	.273628 03	.283015 03	.286892 03	.295574 03
189.0	.239550 03	.242827 03	.248170 03	.254818 03	.259589 03	.269989 03	.274228 03	.283624 03	.287505 03	.296196 03
189.5	.240113 03	.243393 03	.248742 03	.255397 03	.260173 03	.270584 03	.274828 03	.284233 03	.288119 03	.296818 03
190.0	.240675 03	.243959 03	.249314 03	.255976 03	.260758 03	.271180 03	.275427 03	.284843 03	.288732 03	.297440 03
190.5	.241238 03	.244525 03	.249886 03	.256556 03	.261342 03	.271775 03	.276027 03	.285452 03	.289345 03	.298061 03
191.0	.241800 03	.245091 03	.250458 03	.257135 03	.261926 03	.272370 03	.276626 03	.286060 03	.289957 03	.298682 03
191.5	.242362 03	.245657 03	.251030 03	.257714 03	.262510 03	.272965 03	.277226 03	.286669 03	.290570 03	.299303 03
192.0	.242924 03	.246223 03	.251601 03	.258292 03	.263094 03	.273560 03	.277825 03	.287278 03	.291182 03	.299924 03
192.5	.243486 03	.246789 03	.252173 03	.258871 03	.263678 03	.274154 03	.278424 03	.287886 03	.291795 03	.300545 03
193.0	.244048 03	.247354 03	.252744 03	.259450 03	.264262 03	.274749 03	.279023 03	.288495 03	.292407 03	.301166 03
193.5	.244610 03	.247920 03	.253315 03	.260028 03	.264845 03	.275343 03	.279622 03	.289103 03	.293019 03	.301786 03
194.0	.245172 03	.248485 03	.253887 03	.260607 03	.265429 03	.275938 03	.280220 03	.289711 03	.293631 03	.302406 03
194.5	.245734 03	.249051 03	.254458 03	.261185 03	.266012 03	.276532 03	.280819 03	.290319 03	.294242 03	.302827 03
195.0	.246295 03	.249616 03	.255029 03	.261763 03	.266595 03	.277226 03	.281517 03	.291027 03	.294954 03	.303646 03
195.5	.246857 03	.250181 03	.255560 03	.262342 03	.267179 03	.277720 03	.282015 03	.291534 03	.295465 03	.304266 03
196.0	.247418 03	.250746 03	.256171 03	.262920 03	.267762 03	.278314 03	.282613 03	.292142 03	.296077 03	.304886 03
196.5	.247983 03	.251311 03	.256742 03	.263498 03	.268345 03	.278908 03	.283211 03	.292749 03	.296688 03	.305506 03
197.0	.248541 03	.251876 03	.257313 03	.264075 03	.268928 03	.279501 03	.283809 03	.293356 03	.297299 03	.306125 03
197.5	.249102 03	.252441 03	.257883 03	.264653 03	.269510 03	.280095 03	.284407 03	.293965 03	.297910 03	.306744 03
198.0	.249664 03	.253006 03	.258454 03	.265231 03	.270093 03	.280688 03	.285005 03	.294570 03	.298520 03	.307363 03
198.5	.250225 03	.253571 03	.259025 03	.265808 03	.270676 03	.281281 03	.285602 03	.295177 03	.299131 03	.307982 03
199.0	.250786 03	.254135 03	.259595 03	.266386 03	.271258 03	.281874 03	.286200 03	.295784 03	.299742 03	.308601 03
199.5	.251347 03	.254700 03	.260165 03	.266963 03	.271840 03	.282467 03	.286797 03	.296390 03	.300352 03	.309220 03
200.0	.251908 03	.255264 03	.260735 03	.267541 03	.272423 03	.283060 03	.287394 03	.296997 03	.300962 03	.309838 03
200.5	.252468 03	.255829 03	.261306 03	.268118 03	.273005 03	.283653 03	.287991 03	.297603 03	.301572 03	.310456 03
201.0	.253029 03	.256393 03	.261876 03	.268695 03	.273587 03	.284246 03	.288588 03	.298209 03	.302182 03	.311075 03
201.5	.253590 03	.256957 03	.262446 03	.269272 03	.274169 03	.284838 03	.289185 03	.298815 03	.302792 03	.311693 03
202.0	.254150 03	.257521 03	.263015 03	.269849 03	.274751 03	.285431 03	.289781 03	.299421 03	.303401 03	.312311 03
202.5	.254711 03	.258085 03	.263585 03	.270425 03	.275332 03	.286023 03	.290378 03	.300027 03	.304011 03	.312928 03
203.0	.255271 03	.258649 03	.264155 03	.271002 03	.275914 03	.286615 03	.290974 03	.300633 03	.304620 03	.313556 03
203.5	.255832 03	.259213 03	.264724 03	.271579 03	.276496 03	.287207 03	.291571 03	.301238 03	.305230 03	.314183 03
204.0	.256392 03	.259777 03	.265294 03	.272155 03	.277077 03	.287799 03	.292167 03	.301843 03	.305839 03	.314781 03
204.5	.256952 03	.260341 03	.265863 03	.272732 03	.277658 03	.288391 03	.292763 03	.302449 03	.306448 03	.315398 03
205.0	.257512 03	.260904 03	.266433 03	.273308 03	.278240 03	.288983 03	.293359 03	.303054 03	.307056 03	.316015 03
205.5	.258072 03	.261468 03	.266992 03	.273884 03	.278821 03	.289575 03	.293955 03	.303659 03	.307665 03	.316632 03
206.0	.258632 03	.262031 03	.267557 03	.274460 03	.279402 03	.290166 03	.294551 03	.304264 03	.308274 03	.317299 03
206.5	.259192 03	.262595 03	.268140 03	.275036 03	.279983 03	.290757 03	.295146 03	.304868 03	.308882 03	.317805 03
207.0	.259752 03	.263158 03	.268709 03	.275612 03	.280564 03	.291349 03	.295742 03	.305473 03	.309490 03	.318482 03
207.5	.260312 03	.263721 03	.269278 03	.276188 03	.281144 03	.291940 03	.296337 03	.306077 03	.310099 03	.319098 03
208.0	.260871 03	.264285 03	.269847 03	.276764 03	.281725 03	.292531 03	.296932 03	.306682 03	.310707 03	.319714 03
208.5	.261431 03	.264848 03	.270416 03	.277340 03	.282305 03	.293122 03	.297527 03	.307286 03	.311315 03	.320330 03
209.0	.261991 03	.265411 03	.270985 03	.277915 03	.282886 03	.293713 03	.298122 03	.307890 03	.311922 03	.320946 03
209.5	.262550 03	.265974 03	.271557 03	.278491 03	.283466 03	.294304 03	.298717 03	.308494 03	.312530 03	.321562 03
210.0	.263109 03	.266537 03	.272122 03	.279066 03	.284042 03	.294894 03	.299312 03	.309098 03	.313138 03	.322178 03
210.5	.263668 03	.267099 03	.272690 03	.279641 03	.284627 03	.295485 03	.299907 03	.309702 03	.313745 03	.322793 03
211.0	.264228 03	.267662 03	.273259 03	.280217 03	.285207 03	.296075 03	.300502 03	.310305 03	.314352 03	.323409 03
211.5	.264787 03	.268225 03	.273827 03	.280792 03	.285787 03	.296666 03	.301096 03	.310909 03	.314960 03	.324024 03
212.0	.265346 03	.268788 03	.274395 03	.281367 03	.286367 03	.297256 03	.301690 03	.311512 03	.315567 03	.324639 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν/Q	.007500	.005000	.002500	.001000	.000500	.000100	.000050	.000010	.000005	.000001
212.5	.265905 03	.263350 03	.274963 03	.261942 03	.266946 03	.297846 03	.302205 03	.312115 03	.316173 03	.325254 03
213.0	.266466 03	.263912 03	.275531 03	.262517 03	.267526 03	.298436 03	.302879 03	.312719 03	.316780 03	.325869 03
213.5	.267023 03	.264475 03	.276099 03	.263091 03	.268106 03	.299026 03	.303473 03	.313322 03	.317383 03	.326473 03
214.0	.267582 03	.265037 03	.276667 03	.263666 03	.268685 03	.299616 03	.304067 03	.313925 03	.317993 03	.327083 03
214.5	.268141 03	.265599 03	.277235 03	.264241 03	.269265 03	.300206 03	.304661 03	.314527 03	.318600 03	.327712 03
215.0	.268703 02	.266162 03	.277802 03	.264815 03	.269844 03	.300795 03	.305254 03	.315130 03	.319206 03	.328327 03
215.5	.269258 03	.266724 03	.278370 03	.265390 03	.270423 03	.301385 03	.305848 03	.315732 03	.319812 03	.328941 03
216.0	.269817 03	.267286 03	.278938 03	.265964 03	.271002 03	.301974 03	.306441 03	.316335 03	.320418 03	.329555 03
216.5	.270375 02	.267848 03	.279505 03	.266538 03	.271581 03	.302563 03	.307035 03	.316937 03	.321024 03	.330169 03
217.0	.270934 03	.268409 03	.280073 03	.267112 03	.272160 03	.303152 03	.307628 03	.317539 03	.321630 03	.330783 03
217.5	.271492 03	.268971 03	.280640 03	.267687 03	.272739 03	.303742 03	.308221 03	.318141 03	.322236 03	.331396 03
218.0	.272050 03	.269533 03	.281207 03	.268261 03	.273318 03	.304331 03	.308814 03	.318743 03	.322841 03	.332010 03
218.5	.272609 03	.269995 03	.281774 03	.268835 03	.273897 03	.304919 03	.309407 03	.319345 03	.323447 03	.332623 03
219.0	.273167 03	.270556 03	.282341 03	.269408 03	.274475 03	.305508 03	.310000 03	.319947 03	.324052 03	.333236 03
219.5	.273725 03	.271118 03	.282908 03	.269982 03	.275054 03	.306097 03	.310593 03	.320548 03	.324657 03	.333850 03
220.0	.274283 03	.271679 03	.283475 03	.270556 03	.275632 03	.306685 03	.311185 03	.321150 03	.325262 03	.334463 03
220.5	.274841 03	.272241 03	.284042 03	.271129 03	.276211 03	.307274 03	.311778 03	.321751 03	.325867 03	.335075 03
221.0	.275399 03	.272802 03	.284609 03	.271703 03	.276789 03	.307862 03	.312370 03	.322353 03	.326472 03	.335688 03
221.5	.275957 03	.273363 03	.285176 03	.272276 03	.277367 03	.308451 03	.312963 03	.322954 03	.327077 03	.336301 03
222.0	.276514 03	.273924 03	.285742 03	.272850 03	.277945 03	.309039 03	.313555 03	.323555 03	.327681 03	.336913 03
222.5	.277072 03	.274485 03	.286309 03	.273423 03	.278523 03	.309627 03	.314147 03	.324156 03	.328286 03	.337526 03
223.0	.277630 03	.275046 03	.286875 03	.273996 03	.279101 03	.310215 03	.314739 03	.324756 03	.328890 03	.338138 03
223.5	.278187 03	.275607 03	.287442 03	.274569 03	.279679 03	.310803 03	.315331 03	.325357 03	.329495 03	.338750 03
224.0	.278745 03	.276168 03	.288008 03	.275142 03	.280257 03	.311390 03	.315923 03	.325958 03	.330099 03	.339362 03
224.5	.279302 03	.276729 03	.288575 03	.275715 03	.280834 03	.311978 03	.316514 03	.326558 03	.330703 03	.339974 03
225.0	.279860 03	.277290 03	.289141 03	.276288 03	.281412 03	.312566 03	.317106 03	.327159 03	.331307 03	.340586 03
225.5	.280417 03	.277851 03	.289707 03	.276861 03	.281989 03	.313153 03	.317698 03	.327759 03	.331910 03	.341197 03
226.0	.280974 03	.278411 03	.290273 03	.277433 03	.282567 03	.313741 03	.318289 03	.328359 03	.332514 03	.341809 03
226.5	.281531 03	.278972 03	.290839 03	.278006 03	.283144 03	.314328 03	.318880 03	.328959 03	.333118 03	.342420 03
227.0	.282088 03	.279532 03	.291405 03	.278579 03	.283721 03	.314915 03	.319471 03	.329559 03	.333721 03	.343031 03
227.5	.282646 03	.280093 03	.291971 03	.279151 03	.284298 03	.315502 03	.320063 03	.330159 03	.334324 03	.343642 03
228.0	.283203 03	.280653 03	.292536 03	.279723 03	.284875 03	.316089 03	.320654 03	.330758 03	.334928 03	.344254 03
228.5	.283760 03	.281213 03	.293102 03	.280296 03	.285452 03	.316676 03	.321244 03	.331358 03	.335531 03	.344866 03
229.0	.284317 03	.281774 03	.293668 03	.280868 03	.286029 03	.317263 03	.321835 03	.331957 03	.336134 03	.345475 03
229.5	.284874 03	.282335 03	.294233 03	.281440 03	.286606 03	.317850 03	.322426 03	.332557 03	.336737 03	.346086 03
230.0	.285431 03	.282896 03	.294799 03	.282012 03	.287183 03	.318436 03	.323017 03	.333156 03	.337339 03	.346696 03
230.5	.285987 03	.283457 03	.295364 03	.282584 03	.287759 03	.319023 03	.323607 03	.333755 03	.337942 03	.347307 03
231.0	.286543 03	.284018 03	.295929 03	.283156 03	.288336 03	.319609 03	.324197 03	.334354 03	.338545 03	.347917 03
231.5	.287100 03	.284583 03	.296495 03	.283728 03	.288912 03	.320196 03	.324788 03	.334953 03	.339147 03	.348527 03
232.0	.287656 03	.285149 03	.297060 03	.284299 03	.289488 03	.320782 03	.325378 03	.335552 03	.339749 03	.349137 03
232.5	.288213 03	.285711 03	.297625 03	.284871 03	.290065 03	.321368 03	.325968 03	.336151 03	.340352 03	.349747 03
233.0	.288770 03	.286273 03	.298190 03	.285443 03	.290641 03	.321954 03	.326558 03	.336749 03	.340954 03	.350357 03
233.5	.289326 03	.286835 03	.298755 03	.286014 03	.291217 03	.322540 03	.327148 03	.337348 03	.341556 03	.350967 03
234.0	.289883 03	.287397 03	.299320 03	.286586 03	.291793 03	.323126 03	.327738 03	.337946 03	.342158 03	.351576 03
234.5	.290440 03	.287959 03	.299885 03	.287157 03	.292369 03	.323712 03	.328328 03	.338545 03	.342759 03	.352186 03
235.0	.290997 03	.288521 03	.300449 03	.287728 03	.292945 03	.324298 03	.328917 03	.339143 03	.343361 03	.352795 03
235.5	.291554 03	.289083 03	.301014 03	.288299 03	.293521 03	.324883 03	.329507 03	.339741 03	.343963 03	.353404 03
236.0	.292111 03	.289645 03	.301579 03	.288871 03	.294096 03	.325469 03	.330096 03	.340339 03	.344564 03	.354013 03
236.5	.292668 03	.290207 03	.302143 03	.289442 03	.294672 03	.326054 03	.330686 03	.340937 03	.345165 03	.354622 03
237.0	.293225 03	.290770 03	.302708 03	.290013 03	.295248 03	.326639 03	.331275 03	.341535 03	.345767 03	.355231 03

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.007500	.005000	.001000	.000500	.000100	.000050	.000010	.000005	.000001
237.5	.293774	.297367	.303272	.315823	.327225	.331864	.342132	.346368	.355840
238.0	.293830	.297423	.303327	.315878	.327280	.332519	.342787	.346999	.356449
238.5	.293886	.297479	.303383	.315934	.327335	.333073	.343341	.347553	.357003
239.0	.293941	.297534	.303438	.315990	.327390	.333729	.343996	.348208	.357666
239.5	.293997	.297590	.303493	.316046	.327445	.334284	.344551	.348763	.358274
240.0	.294052	.297645	.303548	.316101	.327500	.334839	.345106	.349318	.358882
240.5	.294108	.297701	.303603	.316156	.327555	.335394	.345661	.349873	.359490
241.0	.294163	.297756	.303658	.316211	.327610	.335949	.346216	.350428	.360098
241.5	.294219	.297812	.303713	.316266	.327665	.336504	.346771	.350983	.360706
242.0	.294274	.297867	.303768	.316321	.327720	.337059	.347326	.351538	.361314
242.5	.294329	.297923	.303823	.316376	.327775	.337614	.347881	.352093	.361922
243.0	.294385	.297978	.303878	.316431	.327830	.338169	.348436	.352648	.362529
243.5	.294440	.298034	.303933	.316486	.327885	.338724	.348991	.353203	.363137
244.0	.294496	.298089	.303988	.316541	.327940	.339279	.349546	.353758	.363744
244.5	.294551	.298145	.304043	.316596	.327995	.339834	.350101	.354313	.364351
245.0	.294607	.298200	.304098	.316651	.328050	.340389	.350656	.354868	.364958
245.5	.294662	.298256	.304153	.316706	.328105	.340944	.351211	.355423	.365565
246.0	.294718	.298311	.304208	.316761	.328160	.341499	.351766	.355978	.366172
246.5	.294773	.298367	.304263	.316816	.328215	.342054	.352321	.356533	.366779
247.0	.294829	.298422	.304318	.316871	.328270	.342609	.352876	.357088	.367386
247.5	.294884	.298478	.304373	.316926	.328325	.343164	.353431	.357643	.367992
248.0	.294940	.298533	.304428	.316981	.328380	.343719	.353986	.358198	.368599
248.5	.294995	.298589	.304483	.317036	.328435	.344274	.354541	.358753	.369206
249.0	.295051	.298644	.304538	.317091	.328490	.344829	.355096	.359308	.369813
249.5	.295106	.298699	.304593	.317146	.328545	.345384	.355651	.359863	.370420
250.0	.295162	.298755	.304648	.317201	.328600	.345939	.356206	.360418	.371027
250.5	.295217	.298810	.304703	.317256	.328655	.346494	.356761	.360973	.371634
251.0	.295273	.298865	.304758	.317311	.328710	.347049	.357316	.361528	.372241
251.5	.295328	.298921	.304813	.317366	.328765	.347604	.357871	.362083	.372848
252.0	.295384	.298976	.304868	.317421	.328820	.348159	.358426	.362638	.373455
252.5	.295439	.299032	.304923	.317476	.328875	.348714	.358981	.363193	.374062
253.0	.295495	.299087	.304978	.317531	.328930	.349269	.359536	.363748	.374669
253.5	.295550	.299143	.305033	.317586	.328985	.349824	.360091	.364303	.375276
254.0	.295606	.299198	.305088	.317641	.329040	.350379	.360646	.364858	.375883
254.5	.295661	.299254	.305143	.317696	.329095	.350934	.361201	.365413	.376490
255.0	.295717	.299309	.305198	.317751	.329150	.351489	.361756	.365968	.377097
255.5	.295772	.299365	.305253	.317806	.329205	.352044	.362311	.366523	.377704
256.0	.295828	.299420	.305308	.317861	.329260	.352599	.362866	.367078	.378311
256.5	.295883	.299476	.305363	.317916	.329315	.353154	.363421	.367633	.378918
257.0	.295939	.299531	.305418	.317971	.329370	.353709	.363976	.368188	.379525
257.5	.295994	.299587	.305473	.318026	.329425	.354264	.364531	.368743	.380132
258.0	.296050	.299642	.305528	.318081	.329480	.354819	.365086	.369298	.380739
258.5	.296105	.299698	.305583	.318136	.329535	.355374	.365641	.369853	.381346
259.0	.296161	.299753	.305638	.318191	.329590	.355929	.366196	.370408	.381953
259.5	.296216	.299809	.305693	.318246	.329645	.356484	.366751	.370963	.382560
260.0	.296272	.299864	.305748	.318301	.329700	.357039	.367306	.371518	.383167
260.5	.296327	.299920	.305803	.318356	.329755	.357594	.367861	.372073	.383774
261.0	.296383	.299975	.305858	.318411	.329810	.358149	.368416	.372628	.384381
261.5	.296438	.300031	.305913	.318466	.329865	.358704	.368971	.373183	.384988
262.0	.296494	.300086	.305968	.318521	.329920	.359259	.369526	.373738	.385595
262.5	.296549	.300142	.306023	.318576	.329975	.359814	.370081	.374293	.386202
263.0	.296605	.300197	.306078	.318631	.330030	.360369	.370636	.374848	.386809
263.5	.296660	.300253	.306133	.318686	.330085	.360924	.371191	.375403	.387416
264.0	.296716	.300308	.306188	.318741	.330140	.361479	.371746	.375958	.388023
264.5	.296771	.300364	.306243	.318796	.330195	.362034	.372301	.376513	.388630
265.0	.296827	.300419	.306298	.318851	.330250	.362589	.372856	.377068	.389237
265.5	.296882	.300475	.306353	.318906	.330305	.363144	.373411	.377623	.389844
266.0	.296938	.300530	.306408	.318961	.330360	.363699	.373966	.378178	.390451
266.5	.296993	.300586	.306463	.319016	.330415	.364254	.374521	.378733	.391058
267.0	.297049	.300641	.306518	.319071	.330470	.364809	.375076	.379288	.391665
267.5	.297104	.300697	.306573	.319126	.330525	.365364	.375631	.379843	.392272
268.0	.297160	.300752	.306628	.319181	.330580	.365919	.376186	.380398	.392879
268.5	.297215	.300808	.306683	.319236	.330635	.366474	.376741	.380953	.393486
269.0	.297271	.300863	.306738	.319291	.330690	.367029	.377296	.381508	.394093
269.5	.297326	.300919	.306793	.319346	.330745	.367584	.377851	.382063	.394700
270.0	.297382	.300974	.306848	.319401	.330800	.368139	.378406	.382618	.395307
270.5	.297437	.301030	.306903	.319456	.330855	.368694	.378961	.383173	.395914
271.0	.297493	.301085	.306958	.319511	.330910	.369249	.379516	.383728	.396521
271.5	.297548	.301141	.307013	.319566	.330965	.369804	.380071	.384283	.397128
272.0	.297604	.301196	.307068	.319621	.331020	.370359	.380626	.384838	.397735
272.5	.297659	.301252	.307123	.319676	.331075	.370914	.381181	.385393	.398342
273.0	.297715	.301307	.307178	.319731	.331130	.371469	.381736	.385948	.398949
273.5	.297770	.301363	.307233	.319786	.331185	.372024	.382291	.386503	.399556
274.0	.297826	.301418	.307288	.319841	.331240	.372579	.382846	.387058	.400163
274.5	.297881	.301474	.307343	.319896	.331295	.373134	.383401	.387613	.400770
275.0	.297937	.301529	.307398	.319951	.331350	.373689	.383956	.388168	.401377
275.5	.297992	.301585	.307453	.320006	.331405	.374244	.384511	.388723	.401984
276.0	.298048	.301640	.307508	.320061	.331460	.374799	.385066	.389278	.402591
276.5	.298103	.301696	.307563	.320116	.331515	.375354	.385621	.389833	.403198
277.0	.298159	.301751	.307618	.320171	.331570	.375909	.386176	.390388	.403805
277.5	.298214	.301807	.307673	.320226	.331625	.376464	.386731	.390943	.404412
278.0	.298270	.301862	.307728	.320281	.331680	.377019	.387286	.391498	.405019
278.5	.298325	.301918	.307783	.320336	.331735	.377574	.387841	.392053	.405626
279.0	.298381	.301973	.307838	.320391	.331790	.378129	.388396	.392608	.406233
279.5	.298436	.302029	.307893	.320446	.331845	.378684	.388951	.393163	.406840
280.0	.298492	.302084	.307948	.320501	.331900	.379239	.389506	.393718	.407447
280.5	.298547	.302140	.308003	.320556	.331955	.379794	.390061	.394273	.408054
281.0	.298603	.302195	.308058	.320611	.332010	.380349	.390616	.394828	.408661
281.5	.298658	.302251	.308113	.320666	.332065	.380904	.391171	.395383	.409268
282.0	.298714	.302306	.308168	.320721	.332120	.381459	.391726	.395938	.409875
282.5	.298769	.302362	.308223	.320776	.332175	.382014	.392281	.396493	.410482
283.0	.298825	.302417	.308278	.320831	.332230	.382569	.392836	.397048	.411089
283.5	.298880	.302473	.308333	.320886	.332285	.383124	.393391	.397603	.411696
284.0	.298936	.302528	.308388	.320941	.332340	.383679	.393946	.398158	.412303
284.5	.298991	.302584	.308443	.320996	.332395	.384234	.394501	.398713	.412910
285.0	.299047	.302639	.308498	.321051	.332450	.384789	.395056	.399268	.413517
285.5	.299102	.302695	.308553	.321106	.332505	.385344	.395611	.399823	.414124
286.0	.299158	.302750	.308608	.321161	.332560	.385899	.396166	.400378	.414731
286.5	.299213	.302806	.308663	.321216	.332615	.386454	.396721	.400933	.415338
287.0	.299269	.302861	.308718	.321271	.332670	.387009	.397276	.401488	.415945
287.5	.299324	.302917	.308773	.321326	.332725	.387564	.397831	.402043	.416552
288.0	.299380	.302972	.308828	.321381	.332780	.388119	.398386	.402598	.417159
288.5	.299435	.303028	.308883	.321436	.332835	.388674	.398941	.403153	.417766
289.0	.299491	.303083	.308938	.321491	.332890	.389229	.399496	.403708	.418373
289.5	.299546	.303139	.308993	.321546	.332945	.389784	.400051	.404263	.418980
290.0	.299602	.303194	.309048	.321601	.333000	.390339	.400606	.404818	.419587
290.5	.299657	.303250	.309103	.321656	.333055	.390894			

Percentage Points of the χ^2 -Distribution
Values of χ^2 in Terms of Q and ν

ν	.00000	.00050	.00100	.00000	.00000	.00000
262.5	32169 03	33907 03	35639 03	37182 03	38614 03	39891 03
263.0	32206 03	33966 03	35690 03	37240 03	38674 03	39950 03
263.5	32243 03	34025 03	35741 03	37298 03	38734 03	40009 03
264.0	32280 03	34084 03	35792 03	37356 03	38794 03	40068 03
264.5	32317 03	34143 03	35843 03	37414 03	38854 03	40127 03
265.0	32354 03	34202 03	35894 03	37472 03	38914 03	40186 03
265.5	32391 03	34261 03	35945 03	37530 03	38974 03	40245 03
266.0	32428 03	34320 03	35996 03	37588 03	39034 03	40304 03
266.5	32465 03	34379 03	36047 03	37646 03	39094 03	40363 03
267.0	32502 03	34438 03	36098 03	37704 03	39154 03	40422 03
267.5	32539 03	34497 03	36149 03	37762 03	39214 03	40481 03
268.0	32576 03	34556 03	36200 03	37820 03	39274 03	40540 03
268.5	32613 03	34615 03	36251 03	37878 03	39334 03	40599 03
269.0	32650 03	34674 03	36302 03	37936 03	39394 03	40658 03
269.5	32687 03	34733 03	36353 03	37994 03	39454 03	40717 03
270.0	32724 03	34792 03	36404 03	38052 03	39514 03	40776 03
270.5	32761 03	34851 03	36455 03	38110 03	39574 03	40835 03
271.0	32798 03	34910 03	36506 03	38168 03	39634 03	40894 03
271.5	32835 03	34969 03	36557 03	38226 03	39694 03	40953 03
272.0	32872 03	35028 03	36608 03	38284 03	39754 03	41012 03
272.5	32909 03	35087 03	36659 03	38342 03	39814 03	41071 03
273.0	32946 03	35146 03	36710 03	38400 03	39874 03	41130 03
273.5	32983 03	35205 03	36761 03	38458 03	39934 03	41189 03
274.0	33020 03	35264 03	36812 03	38516 03	39994 03	41248 03
274.5	33057 03	35323 03	36863 03	38574 03	40054 03	41307 03
275.0	33094 03	35382 03	36914 03	38632 03	40114 03	41366 03
275.5	33131 03	35441 03	36965 03	38690 03	40174 03	41425 03
276.0	33168 03	35500 03	37016 03	38748 03	40234 03	41484 03
276.5	33205 03	35559 03	37067 03	38806 03	40294 03	41543 03
277.0	33242 03	35618 03	37118 03	38864 03	40354 03	41602 03
277.5	33279 03	35677 03	37170 03	38922 03	40414 03	41661 03
278.0	33316 03	35736 03	37221 03	38980 03	40474 03	41720 03
278.5	33353 03	35795 03	37272 03	39038 03	40534 03	41779 03
279.0	33390 03	35854 03	37323 03	39096 03	40594 03	41838 03
279.5	33427 03	35913 03	37374 03	39154 03	40654 03	41897 03
280.0	33464 03	35972 03	37425 03	39212 03	40714 03	41956 03
280.5	33501 03	36031 03	37476 03	39270 03	40774 03	42015 03
281.0	33538 03	36090 03	37527 03	39328 03	40834 03	42074 03
281.5	33575 03	36149 03	37578 03	39386 03	40894 03	42133 03
282.0	33612 03	36208 03	37629 03	39444 03	40954 03	42192 03
282.5	33649 03	36267 03	37680 03	39502 03	41014 03	42251 03
283.0	33686 03	36326 03	37731 03	39560 03	41074 03	42310 03
283.5	33723 03	36385 03	37782 03	39618 03	41134 03	42369 03
284.0	33760 03	36444 03	37833 03	39676 03	41194 03	42428 03
284.5	33797 03	36503 03	37884 03	39734 03	41254 03	42487 03
285.0	33834 03	36562 03	37935 03	39792 03	41314 03	42546 03
285.5	33871 03	36621 03	37986 03	39850 03	41374 03	42605 03
286.0	33908 03	36680 03	38037 03	39908 03	41434 03	42664 03
286.5	33945 03	36739 03	38088 03	39966 03	41494 03	42723 03
287.0	33982 03	36798 03	38140 03	40024 03	41554 03	42782 03

Percentage Points of the χ^2 -Distribution:
Values of χ^2 in Terms of Q and ν

ν	0.0000	0.0005	0.0010	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.5000	1.0000	2.0000	5.0000	10.0000	20.0000	50.0000	100.0000	200.0000	500.0000	1000.0000
287.5	34909.03	35316.03	35599.03	35960.03	36332.03	36733.03	37157.03	37607.03	38084.03	38591.03	39130.03	39703.03	40312.03	40958.03	41643.03	42368.03	43134.03	43942.03	44793.03	45688.03
288.5	34914.03	35321.03	35604.03	35965.03	36337.03	36738.03	37162.03	37612.03	38089.03	38596.03	39135.03	39708.03	40317.03	40963.03	41648.03	42373.03	43139.03	43947.03	44798.03	45693.03
289.5	34919.03	35326.03	35609.03	35970.03	36342.03	36743.03	37167.03	37617.03	38094.03	38601.03	39140.03	39713.03	40322.03	40968.03	41653.03	42378.03	43144.03	43952.03	44803.03	45698.03
290.5	34924.03	35331.03	35614.03	35975.03	36347.03	36748.03	37172.03	37622.03	38100.03	38607.03	39146.03	39719.03	40328.03	40974.03	41659.03	42384.03	43150.03	43958.03	44809.03	45704.03
291.5	34929.03	35336.03	35619.03	35980.03	36352.03	36753.03	37177.03	37627.03	38105.03	38612.03	39151.03	39724.03	40333.03	40979.03	41664.03	42389.03	43155.03	43963.03	44814.03	45709.03
292.5	34934.03	35341.03	35624.03	35985.03	36357.03	36758.03	37182.03	37632.03	38110.03	38617.03	39156.03	39729.03	40338.03	40984.03	41669.03	42394.03	43160.03	43968.03	44819.03	45714.03
293.5	34939.03	35346.03	35629.03	35990.03	36362.03	36763.03	37187.03	37637.03	38115.03	38622.03	39161.03	39734.03	40343.03	40989.03	41674.03	42400.03	43165.03	43973.03	44824.03	45719.03
294.5	34944.03	35351.03	35634.03	35995.03	36367.03	36768.03	37192.03	37642.03	38120.03	38627.03	39166.03	39739.03	40348.03	40994.03	41679.03	42405.03	43170.03	43978.03	44829.03	45724.03
295.5	34949.03	35356.03	35639.03	36000.03	36372.03	36773.03	37197.03	37647.03	38125.03	38632.03	39171.03	39744.03	40353.03	41000.03	41684.03	42410.03	43175.03	43983.03	44834.03	45729.03
296.5	34954.03	35361.03	35644.03	36005.03	36377.03	36778.03	37202.03	37652.03	38130.03	38637.03	39176.03	39749.03	40358.03	41005.03	41689.03	42415.03	43180.03	43988.03	44839.03	45734.03
297.5	34959.03	35366.03	35649.03	36010.03	36382.03	36783.03	37207.03	37657.03	38135.03	38642.03	39181.03	39754.03	40363.03	41010.03	41694.03	42420.03	43185.03	43993.03	44844.03	45739.03
298.5	34964.03	35371.03	35654.03	36015.03	36387.03	36788.03	37212.03	37662.03	38140.03	38647.03	39186.03	39759.03	40368.03	41015.03	41699.03	42425.03	43190.03	43998.03	44849.03	45744.03
299.5	34969.03	35376.03	35659.03	36020.03	36392.03	36793.03	37217.03	37667.03	38145.03	38652.03	39191.03	39764.03	40373.03	41020.03	41704.03	42430.03	43195.03	44003.03	44854.03	45749.03
300.5	34974.03	35381.03	35664.03	36025.03	36397.03	36798.03	37222.03	37672.03	38150.03	38657.03	39196.03	39769.03	40378.03	41025.03	41709.03	42435.03	43200.03	44008.03	44859.03	45754.03
301.5	34979.03	35386.03	35669.03	36030.03	36402.03	36803.03	37227.03	37677.03	38155.03	38662.03	39201.03	39774.03	40383.03	41030.03	41714.03	42440.03	43205.03	44013.03	44864.03	45759.03
302.5	34984.03	35391.03	35674.03	36035.03	36407.03	36808.03	37232.03	37682.03	38160.03	38667.03	39206.03	39779.03	40388.03	41035.03	41719.03	42445.03	43210.03	44018.03	44869.03	45764.03
303.5	34989.03	35396.03	35679.03	36040.03	36412.03	36813.03	37237.03	37687.03	38165.03	38672.03	39211.03	39784.03	40393.03	41040.03	41724.03	42450.03	43215.03	44023.03	44874.03	45769.03
304.5	34994.03	35401.03	35684.03	36045.03	36417.03	36818.03	37242.03	37692.03	38170.03	38677.03	39216.03	39789.03	40398.03	41045.03	41729.03	42455.03	43220.03	44028.03	44879.03	45774.03
305.5	34999.03	35406.03	35689.03	36050.03	36422.03	36823.03	37247.03	37697.03	38175.03	38682.03	39221.03	39794.03	40403.03	41050.03	41734.03	42460.03	43225.03	44033.03	44884.03	45779.03
306.5	35004.03	35411.03	35694.03	36055.03	36427.03	36828.03	37252.03	37702.03	38180.03	38687.03	39226.03	39799.03	40408.03	41055.03	41739.03	42465.03	43230.03	44038.03	44889.03	45784.03
307.5	35009.03	35416.03	35699.03	36060.03	36432.03	36833.03	37257.03	37707.03	38185.03	38692.03	39231.03	39804.03	40413.03	41060.03	41744.03	42470.03	43235.03	44043.03	44894.03	45789.03
308.5	35014.03	35421.03	35704.03	36065.03	36437.03	36838.03	37262.03	37712.03	38190.03	38697.03	39236.03	39809.03	40418.03	41065.03	41749.03	42475.03	43240.03	44048.03	44899.03	45794.03
309.5	35019.03	35426.03	35709.03	36070.03	36442.03	36843.03	37267.03	37717.03	38195.03	38702.03	39241.03	39814.03	40423.03	41070.03	41754.03	42480.03	43245.03	44053.03	44904.03	45799.03
310.5	35024.03	35431.03	35714.03	36075.03	36447.03	36848.03	37272.03	37722.03	38200.03	38707.03	39246.03	39819.03	40428.03	41075.03	41759.03	42485.03	43250.03	44058.03	44909.03	45804.03
311.5	35029.03	35436.03	35719.03	36080.03	36452.03	36853.03	37277.03	37727.03	38205.03	38712.03	39251.03	39824.03	40433.03	41080.03	41764.03	42490.03	43255.03	44063.03	44914.03	45809.03
312.5	35034.03	35441.03	35724.03	36085.03	36457.03	36858.03	37282.03	37732.03	38210.03	38717.03	39256.03	39829.03	40438.03	41085.03	41769.03	42495.03	43260.03	44068.03	44919.03	45814.03
313.5	35039.03	35446.03	35729.03	36090.03	36462.03	36863.03	37287.03	37737.03	38215.03	38722.03	39261.03	39834.03	40443.03	41090.03	41774.03	42500.03	43265.03	44073.03	44924.03	45819.03
314.5	35044.03	35451.03	35734.03	36095.03	36467.03	36868.03	37292.03	37742.03	38220.03	38727.03	39266.03	39839.03	40448.03	41095.03	41779.03	42505.03	43270.03	44078.03	44929.03	45824.03
315.5	35049.03	35456.03	35739.03	36100.03	36472.03	36873.03	37297.03	37747.03	38225.03	38732.03	39271.03	39844.03	40453.03	41100.03	41784.03	42510.03	43275.03	44083.03	44934.03	45829.03
316.5	35054.03	35461.03	35744.03	36105.03	36477.03	36878.03	37302.03	37752.03	38230.03	38737.03	39276.03	39849.03	40458.03	41105.03	41789.03	42515.03	43280.03	44088.03	44939.03	45834.03
317.5	35059.03	35466.03	35749.03	36110.03	36482.03	36883.03	37307.03	37757.03	38235.03	38742.03	39281.03	39854.03	40463.03	41110.03	41794.03	42520.03	43285.03	44093.03	44944.03	45839.03
318.5	35064.03	35471.03	35754.03	36115.03	36487.03	36888.03	37312.03	37762.03	38240.03	38747.03	39286.03	39859.03	40468.03	41115.03	41799.03	42525.03	43290.03	44098.03	44949.03	45844.03
319.5	35069.03	35476.03	35759.03	36120.03	36492.03	36893.03	37317.03	37767.03	38245.03	38752.03	39291.03	39864.03	40473.03	41120.03	41804.03	42530.03	43295.03	44103.03	44954.03	45849.03
320.5	35074.03	35481.03	35764.03	36125.03	36497.03	36898.03	37322.03	37772.03	38250.03	38757.03	39296.03	39869.03	40478.03	41125.03	41809.03	42535.03	43300.03	44108.03	44959.03	45854.03
321.5	35079.03	35486.03	35769.03	36130.03	36502.03	36903.03	37327.03	37777.03	38255.03	38762.03	39301.03	39874.03	40483.03	41130.03	41814.03	42540.03	43305.03	44113.03	44964.03	45859.03
322.5	35084.03	35491.03	35774.03	36135.03	36507.03	36908.03	37332.03	37782.03	38260.03	38767.03	39306.03	39879.03	40488.03	41135.03	41819.03	42545.03	43310.03	44118.03	44969.03	45864.03
323.5	35089.03	35496.03	35779.03	36140.03	36512.03	36913.03	37337.03	37787.03	38265.03	38772.03	39311.03	39884.03	40493.03	41140.03	41824.03	42550.03	43315.03	44123.03	44974.03	45869.03
324.5	35094.03	35501.03	35784.03	36145.03	36517.03	36918.03	37342.03	37792.03	38270.03	38777.03	39316.03	39889.03	40498.03	41145.03	41829.03	42555.03	43320.03	44128.03	44979.03	45874.03
325.5	35099.03	35506.03	35789.03	36150.03	36522.03	36923.03	37347.03	37797.03	38275.03	38782.03	39321.03	39894.03	40503.03	41150.03	41834.03	42560.03	43325.03	44133.03	44984.03	45879.03
326.5	35104.03	35511.03	35794.03	36155.03	36527.03	36928.03	37352.03	37802.03	38280.03	38787.03	39326.03	39899.03	40508.03	41155.03	41839.03	42565.03	43330.03	44138.03	44989.03	45884.03
327.5	35109.03	35516.03	35799.03	36160.03	36532.03	36933.03	37357.03	37807.03	38285.03	38792.03	39331.03	39904.03	40513.03	41160.03	41844.03	42570.03	43335.03	44143.03	44994.03	45889.03
328.5	35114.03	35521.03	35804.03	36165.03	36537.03	36938.03	37362.03	37812.03	38290.03	38797.03	39336.03	39909.03	40518.03	41165.03	41849.03	42575.03	43340.03	44148.03	44999.03	45894.03
329.5	35119.03	35526.03	35809.03	36170.03	36542.03	36943.03	37367.03	37817.03	38295.03	38802.03	39341.03	39914.03	40523.03	41170.03	41854.03	42580.03	43345.03	44153.03	45004.03	45899.03
330.5	35124.03	35531.03	35814.03	36175.03	36547.03	36948.03	37372.03	37822.03	38300.03	38807.03	39346.03									

Percentage Points of the χ^2 Distribution Values of χ^2 in Terms of Q and ν

[illegible]

Percentage Points of the χ^2 - Distribution
Values of χ^2 in Terms of Q and ν

ν	0.05	0.10	0.25	0.50	1.00	2.00	5.00	10.00	20.00	50.00	100.00	200.00	500.00	1000.00	2000.00	5000.00	10000.00
1	3.841	2.706	1.642	1.385	1.080	0.838	0.636	0.502	0.401	0.319	0.261	0.215	0.175	0.145	0.120	0.100	0.083
2	5.991	4.605	3.579	3.000	2.448	2.000	1.676	1.392	1.179	1.024	0.893	0.788	0.702	0.635	0.580	0.535	0.497
3	7.879	6.251	4.878	4.108	3.413	2.946	2.558	2.215	1.958	1.745	1.571	1.433	1.319	1.225	1.150	1.089	1.040
4	9.488	7.779	6.344	5.385	4.605	4.015	3.539	3.143	2.858	2.619	2.426	2.270	2.141	2.036	1.950	1.880	1.827
5	11.070	9.236	7.779	6.757	5.991	5.328	4.753	4.256	3.943	3.678	3.473	3.307	3.170	3.056	2.960	2.880	2.824
6	12.592	10.645	9.153	8.034	7.264	6.581	5.946	5.421	5.084	4.808	4.593	4.417	4.272	4.149	4.043	3.955	3.896
7	14.067	12.017	10.521	9.302	8.538	7.858	7.213	6.678	6.324	6.040	5.825	5.639	5.485	5.354	5.240	5.149	5.087
8	15.508	13.362	11.842	10.527	9.753	9.063	8.408	7.863	7.491	7.198	6.983	6.797	6.634	6.494	6.372	6.276	6.212
9	16.919	14.698	13.157	11.831	11.042	10.343	9.678	9.123	8.741	8.439	8.224	8.038	7.875	7.735	7.614	7.513	7.447
10	18.307	16.013	14.441	13.121	12.338	11.629	10.954	10.389	9.997	9.686	9.471	9.285	9.122	8.982	8.861	8.759	8.691
11	19.675	17.338	15.755	14.407	13.621	12.903	12.218	11.643	11.241	10.920	10.705	10.519	10.356	10.216	10.095	9.992	9.923
12	21.026	18.668	17.063	15.678	14.897	14.170	13.475	12.890	12.478	12.148	11.933	11.747	11.584	11.444	11.323	11.220	11.150
13	22.364	19.993	18.367	16.943	16.163	15.426	14.721	14.136	13.714	13.375	13.160	12.974	12.811	12.671	12.550	12.447	12.376
14	23.685	21.315	19.668	18.203	17.424	16.677	15.962	15.367	14.935	14.586	14.371	14.185	14.022	13.882	13.761	13.658	13.586
15	25.000	22.639	20.967	19.457	18.678	17.921	17.196	16.591	16.159	15.800	15.585	15.399	15.236	15.096	14.975	14.872	14.800
16	26.296	23.959	22.264	20.703	19.924	19.164	18.430	17.815	17.373	17.004	16.789	16.603	16.440	16.300	16.179	16.076	16.004
17	27.591	25.275	23.559	21.943	21.170	20.409	19.665	19.050	18.608	18.239	18.024	17.838	17.675	17.535	17.414	17.311	17.239
18	28.869	26.588	24.853	23.178	22.404	21.634	20.880	20.265	19.813	19.444	19.229	19.043	18.880	18.740	18.619	18.516	18.444
19	30.143	27.898	26.146	24.410	23.636	22.865	22.111	21.496	21.044	20.675	20.460	20.274	20.111	19.971	19.850	19.747	19.675
20	31.410	29.196	27.438	25.648	24.867	24.096	23.342	22.727	22.275	21.906	21.691	21.505	21.342	21.202	21.081	20.978	20.906
21	32.671	30.491	28.729	26.886	26.095	25.324	24.570	23.955	23.503	23.134	22.919	22.733	22.570	22.430	22.309	22.206	22.134
22	33.924	31.784	29.970	28.124	27.333	26.563	25.809	25.194	24.742	24.373	24.158	23.972	23.809	23.669	23.548	23.445	23.373
23	35.178	33.076	31.211	29.362	28.571	27.801	27.047	26.432	25.980	25.611	25.396	25.210	25.047	24.907	24.786	24.683	24.611
24	36.423	34.367	32.452	30.600	29.810	29.040	28.286	27.671	27.219	26.850	26.635	26.449	26.286	26.146	26.025	25.922	25.850
25	37.667	35.658	33.693	31.838	31.049	30.279	29.525	28.910	28.458	28.089	27.874	27.688	27.525	27.385	27.264	27.161	27.089
26	38.912	36.949	34.934	33.076	32.288	31.518	30.764	30.149	29.697	29.328	29.113	28.927	28.764	28.624	28.503	28.400	28.328
27	40.156	38.240	36.175	34.314	33.527	32.757	32.003	31.388	30.936	30.567	30.352	30.166	30.003	29.863	29.742	29.639	29.567
28	41.401	39.531	37.416	35.553	34.766	33.996	33.242	32.627	32.175	31.806	31.591	31.405	31.242	31.102	30.981	30.878	30.806
29	42.645	40.822	38.657	36.792	35.995	35.225	34.471	33.856	33.404	33.035	32.820	32.634	32.471	32.331	32.210	32.107	32.035
30	43.889	42.113	39.898	38.029	37.224	36.454	35.700	35.085	34.633	34.264	34.049	33.863	33.700	33.560	33.439	33.336	33.264
31	45.133	43.404	41.139	39.267	38.453	37.683	36.929	36.314	35.862	35.493	35.278	35.092	34.929	34.789	34.668	34.565	34.493
32	46.377	44.695	42.380	40.505	39.682	38.912	38.158	37.543	37.091	36.722	36.507	36.321	36.158	36.018	35.897	35.794	35.722
33	47.621	45.986	43.621	41.743	40.911	40.141	39.387	38.772	38.320	37.951	37.736	37.550	37.387	37.247	37.126	37.023	36.951
34	48.865	47.277	44.862	42.981	42.149	41.379	40.625	40.010	39.558	39.189	38.974	38.788	38.625	38.485	38.364	38.261	38.189
35	50.109	48.568	46.103	44.219	43.378	42.608	41.854	41.239	40.787	40.418	40.203	40.017	39.854	39.714	39.593	39.490	39.418
36	51.353	49.859	47.344	45.457	44.607	43.837	43.083	42.468	42.016	41.647	41.432	41.246	41.083	40.943	40.822	40.719	40.647
37	52.597	51.150	48.585	46.695	45.836	45.066	44.312	43.697	43.245	42.876	42.661	42.475	42.312	42.172	42.051	41.948	41.876
38	53.841	52.441	49.826	47.934	47.065	46.295	45.541	44.926	44.474	44.105	43.890	43.704	43.541	43.401	43.280	43.177	43.105
39	55.085	53.732	51.067	49.172	48.296	47.526	46.772	46.157	45.705	45.336	45.121	44.935	44.772	44.632	44.511	44.408	44.336
40	56.329	55.023	52.308	50.410	49.537	48.767	48.013	47.398	46.946	46.577	46.362	46.176	46.013	45.873	45.752	45.649	45.577
41	57.573	56.314	53.549	51.648	50.766	49.996	49.242	48.627	48.175	47.806	47.591	47.405	47.242	47.102	46.981	46.878	46.806
42	58.817	57.605	54.790	52.886	51.995	51.225	50.471	49.856	49.404	49.035	48.820	48.634	48.471	48.331	48.210	48.107	48.035
43	60.061	58.896	56.031	54.124	53.224	52.454	51.700	51.085	50.633	50.264	50.049	49.863	49.700	49.560	49.439	49.336	49.264
44	61.305	60.187	57.272	55.362	54.463	53.693	52.939	52.324	51.872	51.503	51.288	51.102	50.939	50.799	50.678	50.575	50.503
45	62.549	61.478	58.513	56.600	55.704	54.934	54.180	53.565	53.113	52.744	52.529	52.343	52.180	52.040	51.919	51.816	51.744
46	63.793	62.769	59.754	57.838	56.945	56.175	55.421	54.806	54.354	53.985	53.770	53.584	53.421	53.281	53.160	53.057	52.985
47	65.037	64.060	60.995	59.076	58.186	57.416	56.662	56.047	55.595	55.226	55.011	54.825	54.662	54.522	54.401	54.298	54.226
48	66.281	65.351	62.236	60.314	59.425	58.655	57.901	57.286	56.834	56.465	56.250	56.064	55.901	55.761	55.640	55.537	55.465
49	67.525	66.642	63.477	61.552	60.666	59.896	59.142	58.527	58.075	57.706	57.491	57.305	57.142	57.002	56.881	56.778	56.706
50	68.769	67.933	64.718	62.790	61.907	61.137	60.383	59.768	59.316	58.947	58.732	58.546	58.383	58.243	58.122	58.019	57.947
51	69.999	69.214	65.959	64.028	63.148	62.378	61.624	61.009	60.557	60.188	60.003	59.817	59.654	59.514	59.393	59.290	59.218
52	71.233	70.505	67.200	65.266	64.386	63.616	62.862	62.247	61.795	61.426	61.241	61.055	60.892	60.752	60.631	60.528	60.456
53	72.467	71.736	68.441	66.504	65.625	64.855	64.101	63.486	63.034	62.665	62.480	62.294	62.131	62.000	61.879	61.776	61.704
54	73.699	72.997	69.682	67.742	66.863	66.093	65.339	64.724	64.272	63.903	63.718	63.532	63.369	63.229	63.108	63.005	62.933
55	74.933	74.268	70.923	68.980	68.100	67.330	66.576	65.961	65.509	65.140	64.955	64.769	64.606	64.466	64.345	64.242	64.170
56	76.167	75.509	72.164	70.218	69.338	68.568	67.814	67.199	66.747	66.378	66.193	66.007	65.844	65.704	65.583	65.480	65.408
57	77.401	76.750	73.405	71.456	70.576	69.806	69.052	68.437	67.985	67.616	67.431	67.245	67.082	66.942	66.821	66.718	66.646
58	78.635	77.991	74.646	72.694	71.814	71.044	70.290	69.675	69.223	68.854	68.669	68.483	68.320	68.180	68.059	67.956	67.884
59	79.869	79.232	75.887	73.932	73.052	72.282	71.528	70.913	70.461	70.092	69.907	69.721	69.558	69.418	69.297	69.194	69.122
60	81.103	80.473	77.128	75.170	74.290	73.520	72.766	72.151	71.699	71.330	71.145	70.959	70.796	70.656	70.535	70.432	70.360
61	82.337	81.714	78.369	76.408	75.528	74.758	73.994	73.379	72.927	72.558	72.373	72.187	72.024	71.884	71.763	71.660	71.588
62	83.571	82.955	79.61														

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and ν

ν	.005	.01	.02	.05	.10	.20	.50	1.00	2.00	5.00	10.00	20.00	50.00	100.00	.00050	.00100	.00005	.00001
1	3.84	2.71	2.33	1.64	1.07	.71	.40	.24	.16	.10	.07	.05	.03	.02	.02	.01	.01	.01
2	5.99	4.61	4.02	3.00	2.21	1.68	1.10	.70	.47	.30	.20	.14	.09	.06	.04	.03	.02	.02
3	7.88	6.25	5.41	4.11	3.18	2.37	1.58	1.07	.72	.48	.32	.21	.15	.10	.07	.05	.03	.03
4	9.49	7.78	6.75	5.19	4.08	3.36	1.85	1.26	.84	.54	.38	.25	.17	.12	.08	.06	.04	.04
5	11.07	9.24	8.02	6.26	4.96	4.05	2.01	1.40	.93	.60	.42	.28	.19	.13	.09	.07	.05	.05
6	12.59	10.59	9.35	7.38	5.99	4.58	2.16	1.53	1.03	.67	.47	.31	.21	.15	.10	.08	.06	.06
7	14.07	11.83	10.59	8.38	6.78	5.21	2.30	1.66	1.13	.74	.52	.34	.23	.17	.12	.09	.07	.07
8	15.51	13.09	11.80	9.35	7.52	5.97	2.43	1.78	1.23	.80	.57	.37	.25	.19	.14	.10	.08	.08
9	16.92	14.34	13.02	10.30	8.34	6.75	2.56	1.89	1.32	.87	.62	.40	.28	.21	.16	.12	.09	.09
10	18.31	15.58	14.19	11.19	9.15	7.53	2.68	2.00	1.41	.93	.67	.43	.30	.23	.18	.14	.10	.10
11	19.68	16.81	15.34	12.15	9.99	8.33	2.79	2.10	1.50	.99	.72	.46	.32	.25	.20	.15	.11	.11
12	21.03	18.03	16.50	13.12	10.83	9.15	2.90	2.20	1.59	1.05	.77	.49	.34	.27	.22	.17	.12	.12
13	22.36	19.22	17.67	14.07	11.68	9.99	3.00	2.29	1.68	1.11	.81	.51	.36	.29	.24	.19	.13	.13
14	23.68	20.40	18.82	15.01	12.53	10.83	3.10	2.38	1.77	1.17	.85	.53	.38	.30	.26	.21	.14	.14
15	24.99	21.57	19.97	15.95	13.38	11.68	3.20	2.47	1.86	1.22	.89	.55	.40	.32	.28	.23	.15	.15
16	26.29	22.73	21.12	16.89	14.23	12.53	3.30	2.56	1.94	1.27	.93	.57	.42	.34	.30	.25	.16	.16
17	27.59	23.89	22.27	17.83	15.08	13.38	3.40	2.65	2.03	1.32	.97	.59	.44	.36	.32	.27	.17	.17
18	28.87	25.03	23.42	18.77	15.93	14.23	3.50	2.73	2.11	1.37	1.01	.61	.46	.38	.34	.29	.18	.18
19	30.14	26.17	24.56	19.71	16.78	15.08	3.60	2.82	2.20	1.42	1.05	.63	.48	.40	.36	.31	.19	.19
20	31.41	27.30	25.69	20.65	17.63	15.93	3.70	2.90	2.28	1.47	1.09	.65	.50	.42	.38	.33	.20	.20
21	32.67	28.43	26.82	21.59	18.48	16.78	3.80	2.99	2.36	1.52	1.13	.67	.52	.44	.40	.35	.21	.21
22	33.92	29.56	27.95	22.53	19.33	17.63	3.90	3.07	2.44	1.57	1.17	.69	.54	.46	.42	.37	.22	.22
23	35.17	30.69	29.08	23.47	20.18	18.48	4.00	3.16	2.52	1.62	1.21	.71	.56	.48	.44	.39	.23	.23
24	36.42	31.81	30.21	24.41	21.03	19.33	4.10	3.24	2.60	1.67	1.25	.73	.58	.50	.46	.41	.24	.24
25	37.67	32.94	31.34	25.35	21.88	20.18	4.20	3.33	2.68	1.72	1.29	.75	.60	.52	.48	.43	.25	.25
26	38.91	34.06	32.47	26.29	22.73	21.03	4.30	3.41	2.76	1.77	1.33	.77	.62	.54	.50	.45	.26	.26
27	40.15	35.18	33.60	27.23	23.58	21.88	4.40	3.50	2.84	1.82	1.37	.79	.64	.56	.52	.47	.27	.27
28	41.39	36.30	34.73	28.17	24.43	22.73	4.50	3.58	2.92	1.87	1.41	.81	.66	.58	.54	.49	.28	.28
29	42.63	37.42	35.86	29.11	25.28	23.58	4.60	3.67	3.00	1.92	1.45	.83	.68	.60	.56	.51	.29	.29
30	43.87	38.55	36.99	30.05	26.13	24.43	4.70	3.75	3.08	1.97	1.49	.85	.70	.62	.58	.53	.30	.30
31	45.11	39.67	38.12	30.99	26.98	25.28	4.80	3.84	3.16	2.02	1.53	.87	.72	.64	.60	.55	.31	.31
32	46.35	40.79	39.25	31.93	27.83	26.13	4.90	3.92	3.24	2.07	1.57	.89	.74	.66	.62	.57	.32	.32
33	47.59	41.91	40.38	32.87	28.68	26.98	5.00	4.01	3.32	2.12	1.61	.91	.76	.68	.64	.59	.33	.33
34	48.83	43.04	41.51	33.81	29.53	27.83	5.10	4.09	3.40	2.17	1.65	.93	.78	.70	.66	.61	.34	.34
35	50.07	44.16	42.64	34.75	30.38	28.68	5.20	4.18	3.48	2.22	1.69	.95	.80	.72	.68	.63	.35	.35
36	51.31	45.28	43.77	35.69	31.23	29.53	5.30	4.26	3.56	2.27	1.73	.97	.82	.74	.70	.65	.36	.36
37	52.55	46.40	44.90	36.63	32.08	30.38	5.40	4.35	3.64	2.32	1.77	.99	.84	.76	.72	.67	.37	.37
38	53.79	47.52	46.03	37.57	32.93	31.23	5.50	4.43	3.72	2.37	1.81	1.01	.86	.78	.74	.69	.38	.38
39	55.03	48.64	47.16	38.51	33.78	32.08	5.60	4.52	3.80	2.42	1.85	1.03	.88	.80	.76	.71	.39	.39
40	56.27	49.76	48.29	39.45	34.63	32.93	5.70	4.60	3.88	2.47	1.89	1.05	.90	.82	.78	.73	.40	.40
41	57.51	50.88	49.42	40.39	35.48	33.78	5.80	4.69	3.96	2.52	1.93	1.07	.92	.84	.80	.75	.41	.41
42	58.75	52.00	50.55	41.33	36.33	34.63	5.90	4.77	4.04	2.57	1.97	1.09	.94	.86	.82	.77	.42	.42
43	59.99	53.12	51.68	42.27	37.18	35.48	6.00	4.86	4.12	2.62	2.01	1.11	.96	.88	.84	.79	.43	.43
44	61.23	54.24	52.81	43.21	38.03	36.33	6.10	4.94	4.20	2.67	2.05	1.13	.98	.90	.86	.81	.44	.44
45	62.47	55.36	53.94	44.15	38.88	37.18	6.20	5.03	4.28	2.72	2.09	1.15	1.00	.92	.88	.83	.45	.45
46	63.71	56.48	55.07	45.09	39.73	38.03	6.30	5.11	4.36	2.77	2.13	1.17	1.02	.94	.90	.85	.46	.46
47	64.95	57.60	56.20	46.03	40.58	38.88	6.40	5.20	4.44	2.82	2.17	1.19	1.04	.96	.92	.87	.47	.47
48	66.19	58.72	57.33	46.97	41.43	39.73	6.50	5.28	4.52	2.87	2.21	1.21	1.06	.98	.94	.89	.48	.48
49	67.43	59.84	58.46	47.91	42.28	40.58	6.60	5.37	4.60	2.92	2.25	1.23	1.08	1.00	.96	.91	.49	.49
50	68.67	60.96	59.59	48.85	43.13	41.43	6.70	5.45	4.68	2.97	2.29	1.25	1.10	1.02	.98	.93	.50	.50
51	69.91	62.08	60.72	49.79	43.98	42.28	6.80	5.54	4.76	3.02	2.33	1.27	1.12	1.04	1.00	.95	.51	.51
52	71.15	63.20	61.85	50.73	44.83	43.13	6.90	5.62	4.84	3.07	2.37	1.29	1.14	1.06	1.02	.97	.52	.52
53	72.39	64.32	62.98	51.67	45.68	43.98	7.00	5.71	4.92	3.12	2.41	1.31	1.16	1.08	1.04	.99	.53	.53
54	73.63	65.44	64.11	52.61	46.53	44.83	7.10	5.79	5.00	3.17	2.45	1.33	1.18	1.10	1.06	1.01	.54	.54
55	74.87	66.56	65.24	53.55	47.38	45.68	7.20	5.88	5.08	3.22	2.49	1.35	1.20	1.12	1.08	1.03	.55	.55
56	76.11	67.68	66.37	54.49	48.23	46.53	7.30	5.96	5.16	3.27	2.53	1.37	1.22	1.14	1.10	1.05	.56	.56
57	77.35	68.80	67.50	55.43	49.08	47.38	7.40	6.05	5.24	3.32	2.57	1.39	1.24	1.16	1.12	1.07	.57	.57
58	78.59	69.92	68.63	56.37	49.93	48.23	7.50	6.13	5.32	3.37	2.61	1.41	1.26	1.18	1.14	1.09	.58	.58
59	79.83	71.04	69.76	57.31	50.78	49.08	7.60	6.22	5.40	3.42	2.65	1.43	1.28	1.20	1.16	1.11	.59	.59
60	81.07	72.16	70.89	58.25	51.63	49.93	7.70	6.30	5.48	3.47	2.69	1.45	1.30	1.22	1.18	1.13	.60	.60
61	82.31	73.28	72.02	59.19	52.48	50.78	7.80	6.39	5.56	3.52	2.73	1.47	1.32	1.24	1.20	1.15	.61	.61
62	83.55	74.40	73.15	60.13	53.33	51.63	7.90	6.47	5.64	3.57	2.77	1.49	1.34	1.26	1.22	1.17	.62	.62
63	84.79	75.52	74.28	61.07	54.18	52.48	8.00	6.56	5.72	3.62	2.81	1.51	1.36	1.28	1.24	1.19	.63	.63
64	86.03	76.64	75.41	62.01	55.03	53.33	8.10	6.64	5.80	3.67	2.85	1.53	1.38	1.30	1.26	1.21	.64	.64
65	87.27	77.76	76.54	62.95	55.88	54.18	8.20	6.73	5.88	3.72	2.89	1.55	1.40	1.32	1.28	1.23	.65	.65
66	88.51	78.88	77.67	63.89	56.73	55.03	8.30	6.81	5.96	3.77	2.93	1.57	1.42	1.34	1.30	1.25	.66	.66
67	89.75	79.99	78.80	64.83	57.58	55.88	8.40	6.90	6.04	3.82	2.97	1.59	1.44	1.36	1.32	1.27	.67	.67
68	90.99	81.11	79.93	65.77	58.43	56.73	8.50	6.98	6.12	3.87	3.01	1.61	1.46	1.38	1.34	1.29	.68	.68
69	92.23	82.23	81.06	66.71	59.28	57.58	8.60	7.07	6.20	3.92	3.05	1.63	1.48	1.40	1.36	1.31	.69	.69
70	93.47	83.35	82.19	67.65	60.13	58.43	8.70	7.15	6.28	3.97	3.09	1.65	1.50	1.42	1.38	1.33	.70	.70
71	94.71	84.47	83.32	68.59	60.98	59.28	8.80	7.24	6.36	4.02	3.13	1.67	1.52	1.44	1.40	1.35	.71	.71
72	95.95	85.59	84.45	69.53	61.83	60.13	8.90	7.32	6.44	4.07	3.17	1.69	1.54	1.46	1.42	1.37	.72	.72
73	97.19																	

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α par \tilde{Q} jo stua $m \in \mathbb{N}$, $n \geq m$

1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	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[illegible]

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APPENDIX B
TABLE B
PERCENTAGE POINTS OF THE CHI-SQUARE DISTRIBUTION (Condensed)

PERCENTAGE POINTS OF $Q(\nu|\chi^2)$ – CONDENSED TABLE B

In this appendix, we give a condensed version of the table in Appendix A. The values of Q and ν are taken from the table given in [1, pp. 984-985]. There are numerous errors in that table. One of the largest occurs for $\nu = 7$, $Q = .995$. They give $\chi^2 = .989265$ instead of a correct value of $\chi^2 = .989256$.

The values of χ^2 are given to seven correct significant digits in Table B.

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of α and r

	.995	.990	.975	.950	.900	.750	.500	.250
1	.0001	.0002	.0005	.0010	.0020	.0050	.0100	.0200
2	.0100	.0139	.0200	.0271	.0358	.0445	.0541	.0638
3	.0778	.0878	.1115	.1358	.1627	.1924	.2249	.2592
4	.2876	.3177	.3745	.4279	.4801	.5309	.5793	.6256
5	.6743	.7142	.7879	.8626	.9378	1.0128	1.0875	1.1619
6	1.2367	1.2958	1.3801	1.4759	1.5734	1.6718	1.7711	1.8703
7	1.9380	2.0001	2.0931	2.1975	2.3036	2.4105	2.5183	2.6260
8	2.7154	2.7817	2.8934	3.0108	3.1342	3.2638	3.3996	3.5356
9	3.6191	3.6909	3.8157	3.9463	4.0829	4.2257	4.3748	4.5202
10	4.6729	4.7459	4.8794	5.0188	5.1644	5.3163	5.4746	5.6393
11	5.8008	5.8758	6.0197	6.1698	6.3263	6.4894	6.6592	6.8358
12	6.9778	7.0548	7.2090	7.3694	7.5363	7.7098	7.8900	8.0769
13	8.2601	8.3391	8.5036	8.6744	8.8518	9.0359	9.2268	9.4246
14	9.6189	9.6999	9.8757	10.0581	10.2473	10.4434	10.6466	10.8569
15	11.0646	11.1478	11.3348	11.5258	11.7210	11.9215	12.1284	12.3418
16	12.5916	12.6769	12.8751	13.0774	13.2840	13.4959	13.7133	13.9363
17	14.3426	14.4300	14.6394	14.8529	15.0707	15.2939	15.5226	15.7569
18	16.1536	16.2431	16.4647	16.6900	16.9202	17.1563	17.3984	17.6466
19	18.0128	18.1045	18.3382	18.5767	18.8202	19.0697	19.3253	19.5871
20	19.9125	20.0065	20.2524	20.5038	20.7609	21.0238	21.2926	21.5674
21	21.9558	22.0521	22.3093	22.5726	22.8421	23.1179	23.3999	23.6882
22	24.0006	24.1000	24.3685	24.6434	24.9249	25.2131	25.5081	25.8100
23	26.1473	26.2490	26.5289	26.8154	27.1087	27.4090	27.7163	28.0306
24	28.3962	28.5000	28.7917	29.0904	29.3963	29.7096	30.0304	30.3587
25	30.7784	30.8843	31.1881	31.4938	31.8016	32.1116	32.4240	32.7388
26	33.1962	33.3043	33.6199	33.9374	34.2568	34.5791	34.9043	35.2325
27	35.7809	35.8913	36.2190	36.5484	36.8806	37.2157	37.5537	37.8946
28	38.2876	38.3995	38.7393	39.0808	39.4249	39.7718	40.1216	40.4743
29	40.7846	40.8980	41.2499	41.6034	41.9595	42.3183	42.6798	43.0440
30	43.2801	43.3950	43.7590	44.1251	44.4934	44.8648	45.2393	45.6169
31	45.7834	45.8998	46.2759	46.6546	47.0360	47.4201	47.8069	48.1964
32	48.2848	48.4027	48.7909	49.1814	49.5744	49.9700	50.3682	50.7691
33	50.7836	50.9030	51.2934	51.6861	52.0812	52.4788	52.8790	53.2818
34	53.2801	53.4015	53.7941	54.1889	54.5861	54.9858	55.3881	55.7930
35	55.7834	55.9065	56.3023	56.6999	57.0994	57.5018	57.9071	58.3153
36	58.2848	58.4095	58.8174	59.2271	59.6387	60.0522	60.4686	60.8878
37	60.7836	60.9098	61.3200	61.7321	62.1461	62.5621	62.9801	63.3999
38	63.2801	63.4077	63.8200	64.2341	64.6501	65.0681	65.4881	65.9100
39	65.7834	65.9125	66.3269	66.7434	67.1619	67.5825	67.9951	68.4096
40	68.2848	68.4150	68.8317	69.2501	69.6702	70.0921	70.5160	70.9418

Percentage Points of the χ^2 Distribution
Values of χ^2 in Terms of Q and v

	.0001	.0005	.0010	.0050	.0100	.0250	.0500	.1000	.2000	.5000	1.0000	2.0000	5.0000	10.0000	20.0000	50.0000	100.0000	200.0000	500.0000	1000.0000
1	.1513671 02	.1211567 02	.1082757 02	.7473439 01	.6634097 01	.6221896 01	.5814058 01	.5414058 01	.5014058 01	.4614058 01	.4214058 01	.3814058 01	.3414058 01	.3014058 01	.2614058 01	.2214058 01	.1814058 01	.1414058 01	.1014058 01	.0614058 01
2	.1842068 02	.1520180 02	.1381551 02	.1359663 02	.1233402 01	.1134497 02	.1044497 02	.0964497 02	.0894497 02	.0834497 02	.0784497 02	.0734497 02	.0694497 02	.0654497 02	.0614497 02	.0584497 02	.0554497 02	.0524497 02	.0494497 02	.0464497 02
3	.2110751 02	.1773000 02	.1626624 02	.1283216 02	.1134497 02	.1044497 02	.0964497 02	.0894497 02	.0834497 02	.0784497 02	.0734497 02	.0694497 02	.0654497 02	.0614497 02	.0584497 02	.0554497 02	.0524497 02	.0494497 02	.0464497 02	.0434497 02
4	.2351274 02	.1999735 02	.1846683 02	.1496026 02	.1337870 02	.1244497 02	.1164497 02	.1094497 02	.1034497 02	.0984497 02	.0934497 02	.0894497 02	.0854497 02	.0814497 02	.0784497 02	.0754497 02	.0724497 02	.0694497 02	.0664497 02	.0634497 02
5	.2574483 02	.2210533 02	.2051501 02	.1674960 02	.1506527 02	.1404497 02	.1324497 02	.1254497 02	.1194497 02	.1144497 02	.1094497 02	.1054497 02	.1014497 02	.0974497 02	.0934497 02	.0904497 02	.0864497 02	.0834497 02	.0804497 02	.0774497 02
6	.2785634 02	.2410280 02	.2245774 02	.1854758 02	.1681193 02	.1574497 02	.1494497 02	.1424497 02	.1364497 02	.1314497 02	.1264497 02	.1224497 02	.1184497 02	.1144497 02	.1104497 02	.1074497 02	.1044497 02	.1014497 02	.0984497 02	.0954497 02
7	.2987750 02	.2601777 02	.2432189 02	.2027774 02	.1847531 02	.1734497 02	.1654497 02	.1584497 02	.1524497 02	.1474497 02	.1424497 02	.1384497 02	.1344497 02	.1304497 02	.1264497 02	.1234497 02	.1194497 02	.1164497 02	.1134497 02	.1104497 02
8	.3182763 02	.2786805 02	.2612445 02	.2195495 02	.2003024 02	.1884497 02	.1794497 02	.1724497 02	.1664497 02	.1614497 02	.1564497 02	.1524497 02	.1484497 02	.1444497 02	.1404497 02	.1364497 02	.1334497 02	.1294497 02	.1264497 02	.1234497 02
9	.3371995 02	.2966581 02	.2787715 02	.2358935 02	.2155539 02	.2024497 02	.1924497 02	.1854497 02	.1794497 02	.1744497 02	.1694497 02	.1654497 02	.1614497 02	.1574497 02	.1534497 02	.1504497 02	.1464497 02	.1434497 02	.1394497 02	.1364497 02
10	.3556401 02	.3141981 02	.2959933 02	.2510819 02	.2304250 02	.2164497 02	.2054497 02	.1974497 02	.1914497 02	.1864497 02	.1814497 02	.1774497 02	.1734497 02	.1694497 02	.1654497 02	.1624497 02	.1584497 02	.1554497 02	.1514497 02	.1484497 02
11	.3736699 02	.3313662 02	.3126413 02	.2675685 02	.2472437 02	.2324497 02	.2204497 02	.2114497 02	.2044497 02	.1994497 02	.1944497 02	.1894497 02	.1854497 02	.1814497 02	.1774497 02	.1734497 02	.1694497 02	.1664497 02	.1624497 02	.1594497 02
12	.3913440 02	.3482127 02	.3290943 02	.2829952 02	.2621047 02	.2464497 02	.2344497 02	.2244497 02	.2164497 02	.2104497 02	.2054497 02	.2004497 02	.1954497 02	.1914497 02	.1874497 02	.1834497 02	.1794497 02	.1764497 02	.1724497 02	.1694497 02
13	.4087066 02	.3647779 02	.3452813 02	.2981947 02	.2764955 02	.2604497 02	.2474497 02	.2374497 02	.2284497 02	.2214497 02	.2164497 02	.2114497 02	.2064497 02	.2014497 02	.1974497 02	.1934497 02	.1894497 02	.1864497 02	.1824497 02	.1794497 02
14	.4257929 02	.3810940 02	.3612327 02	.3131935 02	.2914240 02	.2744497 02	.2614497 02	.2514497 02	.2424497 02	.2354497 02	.2304497 02	.2254497 02	.2204497 02	.2154497 02	.2114497 02	.2074497 02	.2034497 02	.1994497 02	.1964497 02	.1924497 02
15	.4426322 02	.3971876 02	.3769733 02	.3280132 02	.3057731 02	.2884497 02	.2744497 02	.2644497 02	.2554497 02	.2474497 02	.2414497 02	.2364497 02	.2314497 02	.2264497 02	.2214497 02	.2174497 02	.2134497 02	.2094497 02	.2064497 02	.2024497 02
16	.4592490 02	.4130807 02	.3925235 02	.3426719 02	.3193333 02	.2994497 02	.2844497 02	.2734497 02	.2644497 02	.2564497 02	.2504497 02	.2454497 02	.2404497 02	.2354497 02	.2314497 02	.2274497 02	.2234497 02	.2194497 02	.2164497 02	.2124497 02
17	.4756637 02	.4287921 02	.4079022 02	.3571847 02	.3338666 02	.3124497 02	.2964497 02	.2854497 02	.2764497 02	.2684497 02	.2624497 02	.2574497 02	.2524497 02	.2474497 02	.2434497 02	.2394497 02	.2354497 02	.2314497 02	.2284497 02	.2244497 02
18	.4918939 02	.4443377 02	.4231283 02	.3715685 02	.3475851 02	.3244497 02	.3074497 02	.2964497 02	.2874497 02	.2794497 02	.2734497 02	.2684497 02	.2634497 02	.2584497 02	.2544497 02	.2504497 02	.2464497 02	.2424497 02	.2394497 02	.2354497 02
19	.5079549 02	.4597312 02	.4382020 02	.3858226 02	.3611037 02	.3364497 02	.3184497 02	.3074497 02	.2984497 02	.2904497 02	.2844497 02	.2794497 02	.2744497 02	.2694497 02	.2654497 02	.2614497 02	.2574497 02	.2534497 02	.2504497 02	.2464497 02
20	.5238597 02	.4749845 02	.4531475 02	.3996655 02	.3735222 02	.3474497 02	.3284497 02	.3174497 02	.3084497 02	.3004497 02	.2944497 02	.2894497 02	.2844497 02	.2794497 02	.2754497 02	.2714497 02	.2674497 02	.2634497 02	.2604497 02	.2564497 02
21	.5396200 02	.4901091 02	.4673704 02	.4140106 02	.3863333 02	.3594497 02	.3394497 02	.3284497 02	.3194497 02	.3114497 02	.3054497 02	.3004497 02	.2954497 02	.2904497 02	.2864497 02	.2824497 02	.2784497 02	.2744497 02	.2714497 02	.2674497 02
22	.5552459 02	.5051112 02	.4823794 02	.4279565 02	.4001833 02	.3724497 02	.3514497 02	.3404497 02	.3314497 02	.3234497 02	.3174497 02	.3124497 02	.3074497 02	.3024497 02	.2984497 02	.2944497 02	.2904497 02	.2864497 02	.2834497 02	.2794497 02
23	.5707464 02	.5200019 02	.4972823 02	.4418128 02	.4135440 02	.3844497 02	.3624497 02	.3514497 02	.3424497 02	.3344497 02	.3284497 02	.3234497 02	.3184497 02	.3134497 02	.3094497 02	.3054497 02	.3014497 02	.2974497 02	.2944497 02	.2904497 02
24	.5861297 02	.5347875 02	.5117863 02	.4555851 02	.4265822 02	.3964497 02	.3734497 02	.3624497 02	.3534497 02	.3454497 02	.3394497 02	.3344497 02	.3294497 02	.3244497 02	.3204497 02	.3164497 02	.3124497 02	.3084497 02	.3054497 02	.3014497 02
25	.6014029 02	.5494746 02	.5261965 02	.4692769 02	.4392769 02	.4084497 02	.3844497 02	.3734497 02	.3644497 02	.3564497 02	.3504497 02	.3454497 02	.3404497 02	.3354497 02	.3314497 02	.3274497 02	.3234497 02	.3194497 02	.3164497 02	.3124497 02
26	.6165725 02	.5640689 02	.5405195 02	.4826988 02	.4526988 02	.4204497 02	.3954497 02	.3844497 02	.3754497 02	.3674497 02	.3614497 02	.3564497 02	.3514497 02	.3464497 02	.3424497 02	.3384497 02	.3344497 02	.3304497 02	.3264497 02	.3234497 02
27	.6316447 02	.5785759 02	.5545022 02	.4956822 02	.4656822 02	.4324497 02	.4064497 02	.3954497 02	.3864497 02	.3784497 02	.3724497 02	.3674497 02	.3624497 02	.3574497 02	.3534497 02	.3494497 02	.3454497 02	.3414497 02	.3374497 02	.3344497 02
28	.6466245 02	.5930003 02	.5683252 02	.5083252 02	.4783252 02	.4444497 02	.4174497 02	.4064497 02	.3974497 02	.3894497 02	.3834497 02	.3784497 02	.3734497 02	.3684497 02	.3644497 02	.3604497 02	.3564497 02	.3524497 02	.3484497 02	.3454497 02
29	.6615168 02	.6073465 02	.5821117 02	.5213562 02	.4913562 02	.4564497 02	.4284497 02	.4174497 02	.4084497 02	.4004497 02	.3944497 02	.3894497 02	.3844497 02	.3794497 02	.3754497 02	.3714497 02	.3674497 02	.3634497 02	.3594497 02	.3564497 02
30	.6763263 02	.6216185 02	.5957305 02	.5337305 02	.5037305 02	.4684497 02	.4394497 02	.4284497 02	.4194497 02	.4114497 02	.4054497 02	.4004497 02	.3954497 02	.3904497 02	.3864497 02	.3824497 02	.3784497 02	.3744497 02	.3704497 02	.3674497 02
31	.6910229 02	.6359460 02	.6094960 02	.5469460 02	.5169460 02	.4804497 02	.4504497 02	.4394497 02	.4304497 02	.4224497 02	.4164497 02	.4114497 02	.4064497 02	.4014497 02	.3974497 02	.3934497 02	.3894497 02	.3854497 02	.3814497 02	.3784497 02
32	.7056229 02	.6499460 02	.6230960 02	.5609460 02	.5309460 02	.4934497 02	.4624497 02	.4514497 02	.4424497 02	.4344497 02	.4284497 02	.4234497 02	.4184497 02	.4134497 02	.4094497 02	.4054497 02	.4014497 02	.3974497 02	.3934497 02	.3904497 02
33	.7201229 02	.6639460 02	.6365960 02	.5739460 02	.5439460 02	.5054497 02	.4744497 02	.4634497 02	.4544497 02	.4464497 02	.4404497 02	.4354497 02	.4304497 02	.4254497 02	.4214497 02	.4174497 02	.4134497 02	.4094497 02	.4054497 02	.4024497 02
34	.7345229 02	.6779460 02	.6500960 02	.5869460 02	.5569460 02	.5174497 02	.4854497 02	.4744497 02	.4654497 02	.4574497 02	.4514497 02	.4464497 02	.4414497 02	.4364497 02	.4324497 02	.4284497 02	.4244497 02	.4204497 02	.4164497 02	.4134497 02
35	.7488229 02	.6917460 02	.6634960 02	.6009460 02	.5709460 02	.5304497 02	.4974497 02	.4864497 02	.4774497 02	.4694497 02	.4634497 02	.4584497 02	.4534497 02	.4484497 02	.4444497 02	.4404497 02	.4364497 02	.4324497 02	.4284497 02	.4254497 02
36	.7630229 02	.7054460 02	.6767960 02	.6139460 02	.5839460 02	.5424497 02	.5084497 02	.4974497 02	.4884497 02	.4804497 02	.4744497 02	.4694497 02	.4644497 02	.4594497 02	.4554497 02	.4514497 02	.4474497 02	.4434497 02	.4394497 02	.4364497 02
37	.7771229 02	.7190460 02	.6899960 02	.6269460 02	.5969460 02	.5544497 02	.5194497 02	.5084497 02	.5004497 02	.4924497 02	.4864497 02	.4814497 02	.4764497 02	.4714497 02	.4674497 02	.4634497 02	.4594497 02	.4554497 02	.4514497 02	.4484497 02
38	.7912229 02	.7327460 02	.7032960 02	.6399460 02	.6099460 02	.5664497 02	.5304497 02	.5194497 02	.5114497 02	.5034497 02	.4974497 02	.4924497 02	.4874497 02	.4824497 02	.4784497 02	.4744497 02	.4704497 02	.4664497 02	.4624497 02	.4594497 02
39	.8052229 02	.7463460 02	.7163960 02	.6529460 02	.6229460 02	.5784497 02	.5414497 02	.5304497 02	.5224497 02	.5144497 02	.508449									

APPENDIX C
PROGRAM LISTING – GAMINV

GAMINV – PROGRAM LISTING FOR COMPUTING x FROM THE INCOMPLETE GAMMA FUNCTION RATIOS AND a

Purpose

This subroutine, for a given P , Q and a , is used to find the x value for which

$$P = \int_0^x e^{-t} t^{a-1} dt / \int_0^\infty e^{-t} t^{a-1} dt, \quad a > 0, \quad x \geq 0$$

$$Q = 1 - P$$

Calling Sequence

Call GAMINV ($a, x, x_0, P, Q, IERR$)

where a, x, P, Q are as above x_0 is an optional input starting value. x_0 must be set to zero if user does not want to specify a starting value. $IERR$ is a parameter set by GAMINV. Normally $IERR$ is an integer from 1 to 19 which denotes the number of iterations the Newton-Raphson method has taken to compute the x value. $IERR$ is stored in Y (See page 10).

$IERR = 0$ when either $a = 1$ or $a < 1$ with $Q\Gamma(a) \geq .45$ and $\{(ax)/(1+a)\} < 10^{-14}$, or $P = 1, Q = 0$ or $P = 0, Q = 1$. In every case an acceptable value of x is given

$IERR = -2$ when $a \leq 0$. No x value is given.

$IERR = -4$ when $|P + Q - 1| \geq 5 \cdot 10^{-13}$. No x value is given.

$IERR = -5$ when $x_0 \leq 0$. No x value is given.

$IERR = -6$ when the Newton-Raphson method has taken 20 iterations to compute the x value. The x value is given but may not be very accurate.

$IERR = -7$ when user has specified a poor input starting value. A subsequent x_0 of the Newton-Raphson method is negative. No x value is given.

Termination procedure The routine uses the Newton-Raphson method and terminates when $n = 20$ (which should never occur) or when

$$|x_{n+1} - x_n| \leq 5 \times 10^{-5} x_{n+1} \quad n \leq 19$$

and one of two other inequalities (38) or (39) are satisfied. If (38) or (39) is not satisfied one more iteration is done.

Accuracy: One can expect about 8 correct significant digits in the output value of x . This can be improved by another call to the routine with that x specified as x_0 .

Restrictions: $a > 0$, $x_0 \geq 0$

If $P = 0$ and $Q = 1$ then $x = 0$ is returned.

If $P = 1$ and $Q = 0$ then $x = 10^{320}$ is returned $|P + Q - 1| \leq 5 \cdot 10^{-13}$.

Remark: GAMINV uses 3 subroutines, PAX6, EVA and GAMCØ3.

Program Listing - GAMINV

```

SUBROUTINE GAMINV ( A,XNP1,S3,PI,QI,IT )
DIMENSION C2(4)
DATA ( C2(I),I=1,4 ) /.15,.05,.01,.001 /
DATA RT2/1.4142 13562 37310/,ALAM/5.E-5/,TALAM/1.E-4/,EPS/1.E-5/,
1 EPS3/1.E-14/,EPS1/5.E-13/,J/0/
XNP1=C.
IT=0
IF ( PI.EQ.0..AND.QI.EQ.1. ) RETURN
IF ( PI.NE.1..OR.QI.NE.0. ) GO TO 2011
XNP1=1.E+320
RETURN
2011 CONTINUE
IF ( A.GT.J. ) GO TO 2:15
IT=-2
RETURN
2J15 CONTINUE
IF ( ABS(PI+QI-1.) .LE.EPS1 ) GO TO 2:17
IT=-4
RETURN
2J17 CONTINUE
IF ( S3.GE.0. ) GO TO 2J41
IT=-5
RETURN
2041 CONTINUE
IF ( A.NE.1. ) GO TO 2:51
XNP1=-ALOG(QI)
RETURN
2051 CONTINUE
IF ( S3.EQ.0. ) GO TO 3312
XN=S3
IF ( PI.LE.0.5 ) GO TO 3017
GO TO 3317
3011 CONTINUE
T3=1./A
AP=(PI+A*T3)**(T3)
XN=AP/(1.-AP/(A+1.))
T3=(XN*A)/(A+1.)
XNP1=XN
IF ( T3.LT.EPS3 ) RETURN
IF ( XN.LE.0.57 ) GO TO 3015
B1LN=ALOG(91)
A3=A-1.
T1=-B1LN+A3*ALOG(-B1LN)
X4=-B1LN-(-A3)*ALOG(T1)-ALOG( (T1+2.-A)/(T1+1.))
XN=AMAX1(XN,X4)
3015 CONTINUE
IF ( PI.GT.0.5 ) GO TO 3317
3017 CONTINUE
IT=J
3021 CONTINUE
CALL PAX6 ( A,XN,P,Q,J,R )
IF ( P.GT.1. ) GO TO 9071
IF ( P.EQ.0..OR.Q.EQ.0. ) GO TO 9071
XNP1=XN*(1.-(P-PI)/R)
IT=IT+1

```


Program Listing - GAMINV

```

      IF ( IT.GE.20 ) GO TO 3039
      T1=ABS(XNP1-XN)
      IF ( T1 .GT.(ALAM*XNP1)) GO TO 3031
      T1=T1*T1
      IF ( 4.LE.(XNP1-1.) ) GO TO 3028
      AP1=A+1.
      T3=T1*(AP1-XNP1)*ABS(A-XNP1-1.)
      T5=(TALAM*XNP1*XNP1*AP1)/A
      IF ( T3.LE.T5 ) RETURN
      GO TO 3029
3028 CONTINUE
      T3=T1*(XNP1+1.-A)*(XNP1+2.-A)
      T5=TALAM*XNP1*(XNP1+1.)
      IF ( T3.LE.T5 ) RETURN
3029 CONTINUE
      CALL PAX6 ( A,XNP1,P,Q,J,R )
      IF ( P.GT.1. ) GO TO 3071
      IF ( 2.EQ.J. ) CALL EVA(A,XNP1,R )
      XN=XNP1
      XNP1=XNP1*(1.-(P-PI)/R)
      IT=IT+1
      IF ( IT.GE.20 ) GO TO 3039
      RETURN
3071 CONTINUE
      XN=XNP1
      GO TO 3021
3312 CONTINUE
      IF ( 1.GT.1. ) GO TO 3331
      CALL GAMC03 ( A,H,EPS,T5 )
      B1=Q1*T5
      IF ( B1.GE.0.4 ) GO TO 3011
      B1LN=ALOG(B1)
      A3=A-1.
      T1=-B1LN+A3*ALOG(-B1LN)
      XN=-B1LN-(-A3)*ALOG(T1)-ALOG( (T1+2.-A)/(T1+1.) )
      IF ( XN.GE.0.67 ) GO TO 3316
      T3=1./A
      AP=(PI*A*T5)**(T3)
      XM=AP/(1.-AP/(A+1.))
      XN=AMAX1(XN,XM)
3316 CONTINUE
      IF ( PI.LE.0.5 ) GO TO 3017
3317 CONTINUE
      IT=0
3321 CONTINUE
      CALL PAX6 ( A,XN,P,Q,J,R )
      IF ( P.GT.1. ) GO TO 3071
      IF ( P.EQ.0..OR.Q.EQ.0. ) GO TO 3071
      XNP1=XN*(1.+(Q-Q1)/R)
      IT=IT+1
      IF ( IT.GE.20 ) GO TO 3009
      T1=ABS(XNP1-XN)
      IF ( T1 .GT.(ALAM*XNP1)) GO TO 3331
      T1=T1*T1
      IF ( 4.LE.(XNP1-1.) ) GO TO 3325

```


Program Listing - GAMINV

```

AP1=A+1.
T3=T1*(AP1-XNP1)*ABS(A-XNP1-1.)
T3=(TALAM*XNP1*XNP1*AP1)/A
IF ( T3.LE.T5 ) RETURN
GO TO J327
3325 CONTINUE
T3=T1*(XNP1+1.-A)*(XNP1+2.-A)
T5=TALAM*XNP1*(XNP1+1.)
IF ( T3.LE.T5 ) RETURN
3327 CONTINUE
CALL PAX6 ( A,XNP1,P,Q,J,R )
IF ( P.GT.1. ) GO TO 3071
IF ( R.EQ.0. ) CALL EVA ( A,XNP1,R )
XN=XNP1
XNP1=XNP1*(1.+(Q-Q1)/R)
IT=IT+1
IF ( IT.GE.20 ) GO TO 30J9
RETURN
3331 CONTINUE
XN=XNP1
GO TO 3321
5331 CONTINUE
P=PI
Q=2I
IF ( Q1.GT.0.5 ) T=SQR((-2.*ALOG(PI) )
IF ( Q1.LE.0.5 ) T=SQR((-2.*ALOG(Q1) )
XP=T+((( -0.21352 34937 15827*T-4.253, 21559 671.4)*T
1 -11.661 67202 83963)*T-3.3112 53221 02741)/
1 (((0.36117 08101 894202-1*T+1.2736 44897 82223)*T
1 +5.4069 15977 63039)*T+6.0105 37656 25462)*T+1.)
IF ( PI.LE.0.5 ) XP=-XP
XPSQ=XP*XP
G1=XP*RT2
G2=.66566 66666 66667*(XPSQ-1. )
XPC3=XPSQ*XP
G3=(XP(3-7.*XP)/(9.*RT2)
XP4TH=XPC3*XP
G4=-(5.*XP4TH+14.*XPSQ- 32.)/435.
G5=(9.*XP4TH*XP+256.*XPC3-433.*XP)/(4860.*RT2)
T1=2.*A
RT2A=SQR(T1)
XN=.5*( T1 +G1*RT2A+G2+G3/RT2A+G4/ T1 +G5/(T1*RT2A))
IF ( PI.GT.0.5 ) GO TO 5471
IF ( A.GT.19. ) GO TO 3017
IF ( XN.GT.(.11 *(A+1.))) GO TO 3017
IF ( A.GT.4. ) GO TO 5469
APP5=A+.5
L3=INT(APP5)
IF ( PI.GT.C2(L3) ) GO TO 3017
5469 CONTINUE
CALL GAMC03 ( A,M,EPS,T1 )
T3=1./A
X5=(PI*A*T1)**(T3)
T3=SQR(1.-(4.*X5)/(A+1. ) )
XN=(2.*X5)/(1.+T3 )

```


Program Listing - GAMINV

```

GO TO 3917
5471 CONTINUE
IF ( A.GE.11.0 ) GO TO 3317
IF ( XN.LE.(4.8*A) ) GO TO 3317
CALL GAMC03 ( A,H,EPS,T1 )
B1=21*T1
B1LN=ALOG(B1)
XN=-B1LN-(1.-1)*ALOG(XN)-ALOG((XN+2.-A)/(XN+1.))
GO TO 3317
9009 CONTINUE
IT=-6
RETURN
9071 CONTINUE
IT=-7
XN+1=XN
RETURN
END

```


Program Listing - GAMINV

```

      SJ3ROJTIME PAX6 ( A,X,AYS,JANS,IOP3,P )
      DIMENSION VA(20),VB(20),ZA(30),ZB(30),SA(20),SB(20)
9.  FORMAT ( 1H0,3H A= ,E22.14,3H X= ,E22.14 )
11. FORMAT ( 15H INPUT ERROR )
      DATA
1  P1/2.4266 79552 35532 E+2 /,
2  P1/2.1979 26161 82942 E+1 /,
3  P2/6.9963 83448 61914 E+3 /,
4  P3/-3.5609 84370 18154 E-2 /,
5  P4/2.1505 88758 65861 E+2 /,
6  Q1/9.1164 90540 45144 E+1 /,
7  Q2/1.5082 79763 04076 E+1 /,
8  Q3/1. /,
9  C1/3.1045 92610 24162 E+2 /
      DATA
1  C1/4.5151 89537 11873 E+2 /,
2  C2/3.3932 09107 34344 E+2 /,
3  C3/1.5298 92050 46940 E+2 /,
4  C4/4.3162 22722 20567 E+1 /,
5  C5/7.2117 58250 84369 E+0 /,
6  C6/5.5419 55174 78974 E-1 /,
7  C7/-1.3086 4857 3 82717E-7 /,
8  A1/40/-2.9961 07077 13542 E-3/,
9  A2/41/-4.9473 09106 23251 E-2 /
      DATA
1  A1/42/-2.2695 05935 39087 E-1 /,
2  A1/43/-2.7866 13046 09648 E-1 /,
3  A1/44/-2.2319 24597 34185 E-2 /,
4  B1/0/1.0620 923.5 28469 E-2 /,
5  B1/1/1.9130 83261 67830 E-1 /,
6  B1/2/1.0516 75107 06793 /,
7  B1/3/1.9973 32018 17135 /,
8  B1/4/1. /,
9  D1/3.0045 92619 50993 E+2 /
      DATA
1  D1/7.9095 09253 27898 E+2 /,
2  D2/3.3135 40948 50610 E+2 /,
3  D3/6.3899 22644 65631 E+2 /,
4  D4/2.7758 54447 43988 E+2 /,
5  D5/7.7000 15293 52295 E+1 /,
6  D5/1.2782 72731 96294 E+1 /,
7  D7/1. /
C      ZST2=SP(OP3+13./OP13936 80. )
C      ZST3=SP(OP361733./OP2J155 3920. )
C      ZST4=SP(OP111388 8261./OP50791 58784 0. )
C      ZST5=SP(OP75692 02533./OP78364 1649 60. )
      DATA
1  C5T5/.16539 65736 46935E-3 /,
2  C5T4/.22422 66600 50012E-2 /,
3  C5T3/.17947 22737 75593E-2 /,
4  C5T2/.24384 14494 74166E-2 /,
5  G44/13/1.7724 53850 90592 /,
6  R12P1/2.5065 28274 63100 /,
7, R13/1.7724 53850 90592 /
      DATA ACC1/5.E-13/,ACC3/3.E-7/,ALPHA3/4.892/,

```


Program Listing - GAMINV

```

1      ALPHA1/7.3+86/,ACO/1.      /,
1      XJ1/31.000/,X03/17.00/,CEP/2.3025 85092 99405/
2      ,UX1/1.0366/,UX3/2.92+5/
3      ,RT2/.1+142 13562 37310E+1/,ABAP/100./
4      ,ALPHA5/3.29053/,X.5/9.7/,JX5/3.887/,ACC5/5.E-4/
      ASAV=A
      IND=1
      ANS=0.
      IF ( IOP3.NE.1 ) GO TO 1105
      ALPHA=ALPHA1
      XJ=XJ1
      ACC=ACC1
      UX=JX1
      GO TO 1111
1105  CONTINUE
      IF ( IOP3.NE.1 ) GO TO 1107
      ALPHA=ALPHA3
      ACC=ACC3
      XJ=XJ3
      UX=UX3
      GO TO 1111
1107  CONTINUE
      ALPHA=ALPHA5
      ACC=ACC5
      XJ=XJ5
      UX=JX5
1111  CONTINUE
      IF ( A.LE.0.0 .OR. X.LT.0.0 ) GO TO 1131
      IF ( X.GT.0.0 ) GO TO 1151
1121  CONTINUE
      GO TO 1171
1131  ANS=2.
      RETURN
1151  CONTINUE
      IF ( A.LT.15. ) GO TO 1331
      RTA=SQRT(A)
      IF ( ACO.LT.ACC1 ) GO TO 1155
      IF ( A.GE.X ) GO TO 1161
      FP=1.-1./(9.*A)*ALPHA/(3.*RTA)
      FP=-FP*FP*FP*A*X
      IF ( FP.GE.0.0 ) GO TO 1191
1155  CONTINUE
      IF ( A.LT.A9A2 ) GO TO 1331
      IF ( (.75*A).GT.X.OR.(1.25*A).LT.X ) GO TO 1331
      GO TO 5011
1161  CONTINUE
      CONTINUE
      FM=1.-1./(9.*A)-ALPHA/(3.*RTA)
      FM=-FM*FM*FM*A*X
      IF ( FM.LE.0. ) GO TO 1121
      GO TO 1155
1171  CONTINUE
      ANS=3.
      QANS=1.
      RETURN

```


Program Listing -- GAMINV

```

1191 CONTINUE
1311 CONTINUE
      ANS=1.
      QANS=3.
      RETURN
1331 CONTINUE
      IF ( A.LE.X ) GO TO 1441
1341 CONTINUE
      IF ( A.GE.30. ) GO TO 1343
      ALGX=ALOG(X)
      T1=-X+A*ALGX
      CALL GAMC03 ( A,H,ACC,GANS )
      R=EXP(T1)/GANS
      GO TO 1349
1343 CONTINUE
      AISQ=1./(A*A)
      T1=A-X+A*ALOG(X/A)+(((AISQ-1.3333 37333 33333)*AISQ+4.666 66666
1 6666667)*AISQ-140.)/(1680.*A)
      R=RTA*EXP(T1)*.39894 22804 01433
1349 CONTINUE
      IF ( A.GT.X ) GO TO 1351
1350 CONTINUE
      IF ( A.LT.1. ) GO TO 1459
      IF ( A.GE.X ) GO TO 3311
      GO TO 3315
1351 CONTINUE
      IF ( R.LE.((.2*A*(1.-X/(A+1.))*ACO)) GO TO 1171
      GO TO 1350
1441 CONTINUE
      IF ( X.GE.X0 ) GO TO 1341
      TWOA=2.*A
      J=INT(TWOA)
      T1=ABS(FLOAT(J)-TWOA)
      IF ( T1.GT.0. ) GO TO 1341
      I=J/2
      AF=A-FLOAT(I)
      IF ( AF.GT.0. ) GO TO 6011
      GO TO 6071
1459 CONTINUE
      IF ( X.LT.1.5 ) GO TO 1461
      T1=(2.+X-A)/(1.+X)
      IF ( R.LE.(ACO*X*T1+.2)) GO TO 1311
      IF ( R.GT.(.101*X*T1) ) GO TO 3311
      GO TO 7011
1461 CONTINUE
      INC=1
      GO TO 3011

C
C      THIS IS PART F
C
2011 CONTINUE
      ACC7=.5*ACC
      T7=A*ALGX
      CEE=2.
      T=T7/CEE

```


Program Listing - GAMINV

```

2031  SUM=T
      CONTINUE
      CEE=CEE+1.
      T=(T*T7)/CEE
      SUM=SJM+T
      IF ( ABS(T).GT.ACC7 ) GO TO 2031
      T2=T7*(1.+SUM)
      TK=-X
      CEE=1.
      AJK=TK/(A+CEE)
      SJM=AJK
2071  CONTINUE
      CEE=CEE+1.
      TK=-(X*TK)/CEE
      AJK=TK/(A+CEE)
      SUM=SUM+AJK
      IF ( ABS(AJK).GE.-ACC*SUM ) GO TO 2071
      T3=-A*SUM
      T1=H
      T4=T1+T2
      T5=T1*T2
      QANS=T3-T4+T3*(T4+T5)-T5
      ANS=1.-QANS
      RETURN
3005  CONTINUE
      IF ( X.LE.CEP ) GO TO 3011
      IF ( X.LT.X0 ) GO TO 7011
      IF ( A.LT.2. ) GO TO 3006
      IF ( (R*(X+1.)).LE.(ACO*X*(2.+X-A)*.2) ) GO TO 1311
      GO TO 9011
3006  CONTINUE
      IF ( R.LE.(.2*ACO*(X+1.-A)) ) GO TO 1311
      GO TO 9011

C
C
C      THIS IS PART A
C
3011  CONTINUE
      HAVACC=ACC*.5
      ROVA=R/A
      SNP1=1.
      SUM=SNP1
      CEE=A
3031  CONTINUE
      CEE=CEE+1.
      T1=X/CEE
      SNP1=SNP1*T1
      SUM=SUM+SNP1
      IF ( T1.GT..66666 66666 66667 ) GO TO 3031
3041  CONTINUE
      IF ( SNP1.LE.HAVACC ) GO TO 3051
      CEE=CEE+1.
      SNP1=(SNP1*X)/CEE
      SUM=SUM+SNP1
      GO TO 3041

```


Program Listing - GAMINV

```

3051  CONTINUE
      ANS=ROVA*SUM
      QANS=1.-ANS
      IF ( !NO.EQ.1.AND.ANS.GT.0.9 ) GO TO 2011
      RETURN

C
C      THIS IS PART E1
C
5011  CONTINUE
      AISQ=1./(A*A)
      T1=A-X+A*ALOG(X/A)*(((AISQ-1.3333 33333 33333)*AISQ+4.666 66666
1  666667)*AISQ-140.)/(1680.*A)
      R=RTA*EXP(T1)*.39694 22804 01433
      ASAV=A
      A=A-1.
      ALPHY=3.*SQRT(A+2./3.)
      ALPINV=1./ALPHY
      A2THRD=A+.66666 66666 66667
      DELTA=(X-A)-.66666 66666 66667
      SZ=DELTA/A2THRD
      Z=EXP(.33333 33333 33333*ALOG(X/A2THRD))
      SQ=(ALPHY*SZ)/((Z+1.)*Z+1.)
      XSAV=X
      X=(SQ*SQ)/2.
      RTX=ABS(SQ)/RT2
      T5=EXP(-X)
      IF ( X.GT.0.25 ) GO TO 5361
      T1=((P3*X+P2)*X+P1)*X+P0
      T3=((Q3*X+Q2)*X+Q1)*X+Q0
      DEL=RTX*(T1/T3)
      CERF=1.-DEL
      GO TO 5381
5361  CONTINUE
      IF ( X.GT.16.) GO TO 5371
      T1=C1+RTX*(C1+RTX*(C2+RTX*(C3+RTX*(C4+RTX*(C5+RTX*(C6+C7*RTX))))))
1  )
      T3=D0+RTX*(D1+RTX*(D2+RTX*(D3+RTX*(D4+RTX*(D5+RTX*(D6+RTX*D7))))))
1  )
      CERF=T1/T3
      DEL=1.-CERF
      GO TO 5381
5371  CONTINUE
      T=1./X
      T1=ALPH0+T*(ALPH1+T*(ALPH2+T*(ALPH3+T*ALPH4)))
      T3=BET1+T*(BET2+T*(BET3+T*(BET4)))
      CERF=(1./RTX)*(1./RT PI+T1/(T3*X))
      DEL=1.-CERF
5381  CONTINUE
      Z43=1.
      IF ( X.LE.0.25 ) Z80=(.5*CERF*RT2PI)/T5
      IF ( X.GT.0.25 ) Z80=.5*CERF*RT2PI
      IF ( SQ.GE.0. ) GO TO 5389
      Z43=-1.
5389  CONTINUE
      X=XSAV

```


Program Listing - GAMINV

COPY AVAILABLE TO THE PUBLIC DOES NOT
PERMIT FULLY REPRODUCIBLE REPRODUCTION

```

Z3(1)=Z30
ZA(1)=ZA0
S3S2=S3*S2
T7=-1./ (ABS(S3))
TOL=ACC*Z30
DO 5391 L=2,5
K=2*(L-1)
T7=T7*S3S0
Z3(L)=-T7
1  +(FLOAT(K)-1.)*Z3(L-1)
ZA(L)=-T7  *S0+FLOAT(K)*ZA(L-1)
5391 CONTINUE
V3(1)=Z3(1)
V3(2)=-.63333 33333 33333E-1*Z3(3)
V4(1)=.66666 66666 66666E-1*ZA(3)
S3(1)=V3(1)
ALPHS3=ALFINV*ALPINV
ALPHC3=ALPHSQ*ALPINV
S3(2)=V3(2)*ALPHSQ
SA(1)=V4(1)*ALPHC3
T15=S3(1)+S3(2)
T17=SA(1)
V3(3)=- (Z3(4)-.0625*Z3(5))* .55555 55555 55556E-1
V4(2)=.47619 04761 04761E-1*ZA(4)-.55555 55555 55556E-2*ZA(5)
T23=ALPHSQ
I5=3
MF=J
5395 CONTINUE
I7=I5-1
T23=T23*ALPHSQ
S3(I5)=V3(I5)*T23
S4(I7)=V4(I7)*T23*ALPINV
T15=T15+S3(I5)
T17=T17+SA(I7)
IF (ABS(S3(I5)).LT.TOL.AND.ABS(SA(I7)).LT.TOL) GO TO 5431
I3=2*I5
I5=I5+1
T7=T7*S3S0
T25=6.*FLOAT(I5)-7.
Z3(I3)=-T7+T25*Z3(I3-1)
Z4(I3)=-T7*S0+(T25+1.)*Z4(I3-1)
T7=T7*S3S0
Z3(I3+1)=-T7+(T25+2.)*Z3(I3)
Z4(I3+1)=-T7*S0+(T25+3.)*Z4(I3)
MF=MF+1
GO TO ( 5397,5399,5401,5403,5405,5407,5409,5411,5413,5415,5431),MF
1
5397 CONTINUE
V3(4)=- (Z3(5)-.16444 44444 44444E-2*Z3(6)+.23148 14814 81481E-2*Z3(7)
1  )*.41666 66666 66667E-1
VA(3)=(ZA(5)-.20714 20714 42057*ZA(6)+.00625*ZA(7))* .37037 03703
1  73370E-1
GO TO 5395
5399 CONTINUE
V3(5)=- (Z3(6)-.24370 10582 01058*Z3(7)+.11342 59259 25926E-1*Z3(8)

```


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PERMIT FULLY LEGAL

Program Listing - GAMINV

```

1      1-.60281 63580 24691E-4*ZB(9))*.33333 33333 33333E-1
VA(4)=.33303 03030 30303E-1*ZA(6)-.85097 00176 36684E-2*ZA(7)
1      +.52336 86.67 01940E-3*ZA(6)-.64300 41152 26337E-5*ZA(9)
GO TO 5395
5401 CONTINUE
V3(6)=-.29(7)-.31303 85487 52834*ZB(8)+.23806 21693 12109E-1*Z3(9)
1      1-.47.67 90123 45679E-3*ZB(1)+.12050 32716 04938E-5*Z3(11))
2      .27777 77777 77777E-1
VA(5)=.25641 12564 10256E-1*ZA(7)-.37892 14900 32601E-2*ZA(3)+
1      .70924 16225 74356E-3*ZA(9)-.21568 19017 93063E-4*ZA(10)
2      +Z4(11)*.13395 91906 72154E-6
GO TO 5395
5403 CONTINUE
VA(5)=+.22222 22222 22222E-1*ZA(8)-.88026 17135 95047E-2*ZA(9)+
1      .10129 13208 68040E-2*ZA(10)-.42538 29446 73068E-4*ZA(11)+
2      .62437 74387 13028E-6*ZA(12)-.22326 53177 86923E-6*ZA(13)
VB(7)=-.23809 52380 95238E-1*ZB(8)+.88185 92672 75934E-2*ZB(9)-
1      .90642 29253 23273E-3*ZB(10)+.31511 18214 77562E-4*ZB(11)-
2      .32596 73639 68907E-6*Z3(12)+.40513 60737 22756E-9*Z9(13)
GO TO 5395
5405 CONTINUE
VA(7)=+.19607 84313 72549E-1*ZA(9)-.86836 00350 26702E-2*ZA(10)+
1      .11301 47027 03357E-2*ZA(11)-.66655 77815 71536E-4*ZA(12)+
2      .15617 53570 88423E-5*ZA(13)-.13739 92297 55917E-7*ZA(14)+
3      .31309 07191 48504E-10*ZA(15)
VB(8)=-.20833 33333 33333E-1*Z3(9)+.87544 99954 20366E-2*Z3(10)-
2      .11092 44092 74237E-2*Z3(11)+.54338 41632 21759E-4*Z3(12)-
3      .10360 16990 45843E-5*Z3(13)+.63258 50670 62948E-3*Z3(14)-
3      .55373 34270 50400E-11*Z3(15)
GO TO 5395
5407 CONTINUE
VA(8)=+.17543 85904 91228E-1*ZA(10)-.84985 14229 13981E-2*ZA(11)+
1      .13448 60337 51072E-2*ZA(12)-.92061 86407 70127E-4*ZA(13)+
2      .29398 23607 35374E-5*ZA(14)-.42707 63569 50073E-7*ZA(15)+
3      .24541 46544 68959E-9*ZA(16)-.36915 56180 33933E-12*ZA(17)
VB(9)=-.18518 51851 65185E-1*Z3(10)+.65966 42554 97589E-2*Z3(11)-
1      .12740 20546 38934E-2*Z3(12)+.79204 62192 68942E-4*Z3(13)-
2      .21983 32483 95004E-5*Z3(14)+.25640 60419 02548E-7*Z3(15)-
3      .10320 26650 58116 E-9*Z3(16)+.57600 56531 74020E-13*Z3(17)
GO TO 5395
5409 CONTINUE
VA(9)=+.15373 01007 30159E-1*ZA(11)-.82821 56153 67318E-2*ZA(12)
1      +.14652 06930 61439E-2*ZA(13)-.11757 92089 58914E-3*ZA(14)+
2      .47165 76991 79954E-5*ZA(15)-.95201 29482 98324E-7*ZA(16)+
3      .92192 73029 09851E-3*ZA(17)-.36402 25970 59366E-11*ZA(18)+
4      .38453 71021 18680E-14*ZA(19)
V3(10)=-.16666 00060 66667E-1*Z3(11)+.83928 01741 73222E-2*Z3(12)
1      -.14082 22293 54033E-2*Z3(13)+.10485 97493 66735E-3*Z3(14)-
2      .37786 94453 83984E-5*Z3(15)+.65709 46457 57853E-7*Z3(16)-
3      .06433 50733 06120E-9*Z3(17)+.13412 65412 18996E-11*Z3(18)-
4      .53407 93084 98167E-15*Z3(19)
GO TO 5395
5411 CONTINUE
VA(10)=+.14492 75302 31884E-1*ZA(12)-.80534 46095 24176E-2*ZA(13)
2      +.15625 36761 62327E-2*ZA(14)-.14249 82760 43991E-3*ZA(15)+

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Program Listing -- GAMINV

```

3      .57347 44263 92697E-5*ZA(16)-.17514 13319 57715E-6*ZA(17)+
4      .24007 91370 41612E-5*ZA(18)-.16288 16309 64713E-10*ZA(19)+
5      .46225 32193 27600E-13*ZA(20)-.35605 28723 32111E-16*ZA(21)
V3(11)=-.15151 51515 15152E-1*ZB(12)+.81685 47795 41828E-2*ZB(13)
1      -.15164 52843 22835E-2*ZB(14)+.13014 45605 38248E-3*ZB(15)-
2      .57147 99417 62549E-5*ZB(16)+.13158 76549 27232E-6*ZB(17)-
3      .15383 56544 74373E-8*ZB(18)+.82135 07414 80055E-11*ZB(19)-
4      .15509 66311 87868E-13*ZB(20)+.44506 60904 15139E-17*ZB(21)
GO TO 5395
5413  CONTINUE
VA(11)=+.13333 33333 33333E-1*ZA(13)-.78228 73159 47945E-2*ZA(14)
1      +.15412 35305 54189E-2*ZA(15)-.16641 22539 53536E-3*ZA(16)+
2      .91363 09627 54997E-5*ZA(17)-.28427 17670 98726E-6*ZA(18)+
3      .50343 42786 29405E-8*ZA(19)-.49118 23691 34031E-10*ZA(20)+
4      .24317 07160 76481E-12*ZA(21)-.51251 26773 74051E-15*ZA(22)+
5      .29671 7269 43426E-13*ZA(23)
V3(12)=-.13888 88888 88889E-1*ZB(13)+.79379 48362 75189E-2*ZB(14)
1      -.16039 76493 89170E-2*ZB(15)+.15459 78095 11729E-3*ZB(16)-
2      .79380 81011 28000E-5*ZB(17)+.22651 75615 82738E-6*ZB(18)-
3      .35325 6641 8641E-8*ZB(19)+.29351 25130 22109E-10*ZB(20)-
4      .11351 52915 07799E-12*ZB(21)+.15785 01067 33903E-15*ZB(22)-
6      .33717 12606 17530E-13*ZB(23)
GO TO 5395
5415  CONTINUE
VA(12)=+.12345 67901 23457E-1*ZA(14) -.75962 63771 72480E-2*ZA(11)
1      51+.17048 20355 90103E-2*ZA(16)-.18910 65799 70833E-3*ZA(17)+
2      .11572 03320 56449E-5*ZA(18)-.42273 44701 27948E-6*ZA(19)+
2      .91376 18615 14362E-8*ZA(20)-.11653 40193 25387E-9*ZA(21)+
3      .94315 10565 35040E-12*ZA(22)-.31318 52910 85580E-14*ZA(23)+
4      .50384 30725 14400E-17*ZA(24)-.22478 06537 45020E-20*ZA(25)
V3(13)=-.12820 51282 05120E-1*ZB(14)+.77088 28747 69910E-2*ZB(15)
1      -.16747 26889 27663E-2*ZB(16)+.17731 99594 95527E-3*ZB(17)-
2      .15383 04179 05402E-4*ZB(18)+.34937 60792 28262E-6*ZB(19)-
3      .58844 70270 71384E-8*ZB(20)+.77494 50300 60715E-10*ZB(21)-
4      .47532 73760 28715E-12*ZB(22)+.13508 28991 58372E-14*ZB(23)-
5      .14341 01846 89323E-17*ZB(24)+.23414 67226 51062E-21*ZB(25)
GO TO 5395
5431  CONTINUE
T=1./A
CST=(((((CST5*T-CST4)*T+CST3)*T+CST2)*T-.11959 87654 32199E-1)*T
1      +.27777 77777 77778 E-1)*T+1.
PAP1X=(CST*(T15+T17)*T5)/RT2PI
A=ASAV
IF ( S..LT.). ) GO TO 5441
QANS=PAP1X
ANS=1.-QANS
GO TO 5451
5441  CONTINUE
ANS=PAP1X
QANS=1.-ANS
5451  CONTINUE
RETURN

```

C
C
C

THIS IS PART 01

Program Listing - GAMINV

```

6011 CONTINUE
      N=0
      RTX=SQRT(X)
      T5=EXP(-X)
      RN=T5/(RTX*GAMPT5)

C
C      THIS IS PART B1 SUPPLEMENT
C
      IF ( X.GT.16.) GO TO 6031
      T1=CU+RTX*(C1+RTX*(C2+RTX*(C3+RTX*(C4+RTX*(C5+RTX*(C6+C7*RTX))))))
1      T3=00+RTX*(01+RTX*(02+RTX*(03+RTX*(04+RTX*(05+RTX*(06+RTX*07))))))
1      DEL=(T5*T1)/T3
      GO TO 6091
6031 CONTINUE
      T=1./X
      T1=ALPH0+T*(ALPH1+T*(ALPH2+T*(ALPH3+T*ALPH4)))
      T3=3ET0+T*(3ET1+T*(3ET2+T*(3ET3+T*3ET4)))
      DEL=( T5 /RTX)*(1./RTPI +T1/(T3*X))
      GO TO 6091
6071 CONTINUE
      N=1
      RN=EXP(-X)
      DEL=RN
6091 CONTINUE
      PNCX=DEL
      CEE=AF+FLCAT(N)-1.
6101 CONTINUE
      IF ( N.EQ.I ) GO TO 6111
      N=N+1
      CEE=CEE+1.
      RN=(X*RN)/CEE
      PNCX=PNCX+RN
      GO TO 6101
6111 CONTINUE
      R=X*RN
      QANS=PNCX
      ANS=1.-QANS
      RETURN

C
C      THIS IS PART C
C
7011 CONTINUE
      A2NM1=1.
      A2N=1.
      B2NM1=X
      B2N=X+1.-A
      AN=1.
7031 CONTINUE
      A2NM1=X*A2N+AN*A2NM1
      B2NM1=X*B2N+AN*B2NM1
      AN0=A2NM1/B2NM1
      AN=AN+1.
      SA2N=AN-A

```


Program Listing - GAMINV

```

A2N=A2NM1+SA2N*A2N
B2N=B2NM1+SA2N*B2N
ANJ=A2N/B2N
IF ( ABS(ANJ-AMJ).GE.(ACC*ANG) ) GO TO 7031
QANS=R*ANJ
ANS=1.-QANS
RETURN

```

```

C
C      THIS IS PART D
C

```

```

9011 CONTINUE
    SNP1=1.
    SUM=SNP1
    CEE=A
9031 CONTINUE
    CEE=CEE-1.
    SNP1=(SNP1*CEE)/X
    SUM=SJM+SNP1
    IF ( ABS(SNP1).GE.ACC ) GO TO 9031
    QANS=(R*SUM)/X
    ANS=1.-QANS
    RETURN
END

```


Program Listing - GAMINV

```

SUBROUTINE GAMC03 ( A,M,      AC ,T1 )
DIMENSION C(30)
DATA ( C(I),I=3,18 ) /
1  +.57721 56649 01533 E+0 ,
2  -.65587 80715 2J254 E+0 ,
3  -.42002 63503 40952 E-1 ,
4  +.16653 86113 02291 E+0 ,
5  -.42197 73455 55443 E-1 ,
6  -.95219 71527 87697 E-2 ,
7  +.72189 43246 66311 E-2 ,
8  -.11651 67591 05907 E-2 ,
9  -.21524 16741 14951E-3 ,
1 +.12805 02023 03116 E-3 ,
2 -.20134 85470 47802 E-4 ,
3 -.12504 93492 14267 E-5 ,
4 +.11330 27231 90170 E-5 ,
5 -.20563 38416 97761 E-6 ,
6 +.50160 95104 48142 E-8 ,
7 +.50020 07644 46922 E-8 /
ACC=.5*AC
I=INT(A)
A=A-FLOAT(I)
IF ( AF.EQ.0 . ) GO TO 3031
CEE=AF-1.
IF ( AF.LT.0.5 ) CEE=AF
PHI=CEE
<=3
ANK=C(K)*CEE
SUM=ANK
3011 CONTINUE
CEE=CEE*PHI
K=K+1
ANK=C(K)*CEE
SUM=SUM+ANK
IF ( ABS(ANK).LT.(ACC*ABS(SUM)) ) GO TO 3031
IF ( K.EQ.18 ) GO TO 3031
GO TO 3011
3031 CONTINUE
H=SUM
IF ( AF.GE.0.5 ) H=(1.-A+SUM)/A
T1=1.+SUM
IF ( AF.LT.0.5 ) T1=AF*T1
T1=1./T1
IF ( I.EQ.0 ) RETURN
AJ=AF-1.
J=J
3051 CONTINUE
J=J+1
AJ=AJ+1.
T1=AJ*T1
IF ( J.LT.I ) GO TO 3051
3071 CONTINUE
GO TO 3151
3091 CONTINUE
J=J

```


Program Listing - GAMINV

```
      T1=1.  
      IF ( I.EQ.1 ) RETURN  
      I=I-1  
3131  CONTINUE  
      J=J+1  
      T1=FLOAT(J)*T1  
      IF ( J.LT.I ) GO TO 3131  
3151  CONTINUE  
      RETURN  
      END
```


Program Listing - GAMINV

```

SJJROUTINE EVA ( A,X,R )
DATA ACC/5.E-13/
IF ( A.GE.30. ) GO TO 13.3
T1=-X+A*ALOG(X)
CALL GAMCOJ ( A,H,ACC,GANS )
R=EXP(T1)/GANS
RETURN
13.3 CONTINUE
RTA=SQRT(A)
AIS2=1./(A*A)
T1=A-X+A*ALOG(X/A)+(((AISQ-1.3333 33333 33333)*AISQ+4.666 66666
1 666667)*AISQ-140.)/(1680.*A)
R=RTA*EXP(T1)*.39894 22804 01433
RETURN
END

```


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		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) A. R. DiDonato R. K. Hageman		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Surface Weapons Center Dahlgren Laboratory Dahlgren, Virginia 22448		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE Apr 1977
		13. NUMBER OF PAGES 199 12 171p
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
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18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Percentile points of χ^2 Newton-Raphson, inverse gamma function		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A Fortran IV program is developed for computing the percentage points of the Chisquare distribution. The Newton-Raphson procedure is used with good initial approximations. The maximum number of iterations is four and in most cases only one or two are needed. An extensive table is given of the percentage points χ^2 in terms of v , a positive number, and $Q(v \chi^2)$, the probability integral of the Chi-square distribution.		

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